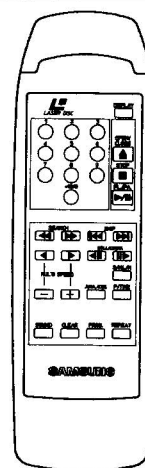
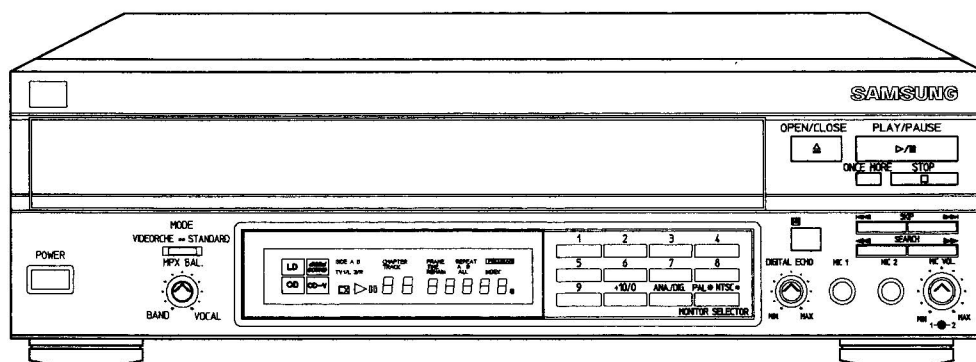




SERVICE MANUAL

MODEL: DV500K

CD CDV LD PLAYER



SPECIFICATIONS

1. GENERAL

- Power consumption: 42W
- Weight: 23.1 lb
- Dimensions: 420(W)×410(D)×132(H)mm
- Operating temperature: +41°F ~ +95°F

2. DISC

Laser Vision Discs (LD)

- Spindle motor speed
 - Standard play disc (CAV): 1800rpm
 - Extended play disc (CLV): 1800rpm (inner periphery) to 600rpm (outer periphery)
.... For a 12" disc

- Maximum playing time
 - 12" standard play disc (CAV): 1 hour/both sides
 - 12" extended play disc (CLV): 2 hours/both sides
 - 8" standard play disc (CAV): 28 min/both sides
 - 8" extended play disc (CLV): 40 min/both sides

Compact Discs (CD)

- Diameter: 5", 3"
- Thickness: 1.2mm
- Rotation direction (pick up side): counter clock wise
- Maximum playing time
 - 5" disc: 74 min.
 - 3" disc: 20 min.

Compact Disc with Video (CDV)

- Diameter: 5"
- Thickness: 1.2mm
- Rotation direction (pick up side): counter clock wise

- Linear speed
 - Audio portion: 1.2 ~ 1.4m/sec.
 - Video portion: 11 ~ 12m/sec.
- Maximum playing time
 - Audio portion: 20 min. (digital)
 - Video portion: 5 min. (CLV)

3. VIDEO CHARACTERISTICS

- SIGNAL: NTSC 3.58/QUASI PAL/NTSC 4.43
- Video output
 - Level: 1Vp-p normal, sync, negative, terminated.
 - Impedance: 75Ω unbalanced
 - Jack: RCA jack/RF jack

4. AUDIO CHARACTERISTICS

- Output level
 - During analog audio output: 200mVrms (1KHz, 40% Modulation)
 - During digital audio output 200mVrms (1KHz, -20dB)
- Number of channels: 2
- Output jack: RCA jack
- Digital audio characteristics

Frequency response	20Hz ~ 20KHz
S/N ratio	96dB
Dynamic range	96dB
Channel Separation	75dB
Total harmonic distortion	0.01%

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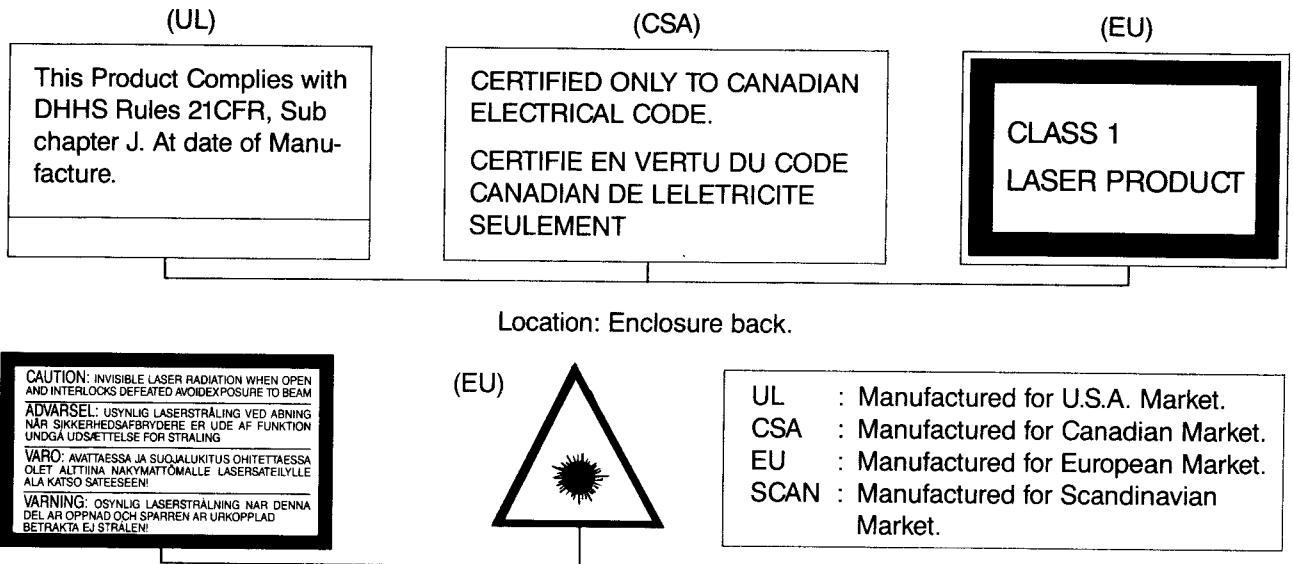
1. SAFETY PRECAUTION

1-1. CLASS 1 LASER PRODUCT

This laser disc player is classified as a CLASS 1 laser product.

1-2. LASER WARNING LABEL

The label shown below may be affixed or not according to country.



Location: on the disc clamber or inner side of UNIT door or nearby UNIT chassis.

1-3. LASER BEAM WARNING

- ADVERSEL** — USYNLIG LASERSTRÅLING VED ÅBNING, NÅR SIKKERHEDSAFBRYDERE ER UDE AF FUNKTION. UNDGÅ UDSÆTTELSE FOR STRÅLING.
- VARNING** — OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD OCH SPÄRR ÄR URKOPPLAD. STRÅLEN ÄR FARLIG.
- VARITUS** — LAITE SISÄLTÄÄ LASERDIODIN, JOKA LÄHETTÄÄ NÄKYMÄTTÖNTÄ SILMILLE VAARALLISTA LASERSÄTEILYÄ.
- CAUTION** — INVISIBLE LASER RADIATION WHEN DOOR IS OPEN AND INTERLOCKS DEFEATED. AVOID EXPOSURE TO BEAM.

1-4. LASER DIODE SPECIFICATION (OPTICAL PICK-UP)

- Material: GaAs+GaAlAs
- Wavelength: 760-800nm
- Emission duration: Continuous
- Laser Output: max. 400 μ W-
 - * This output is the value measured at distance 1.6mm from the objective lens surface on the optical pick-up block.
- Classification: CLASS 1

1-5. WARNING FOR SERVICING

- WARNING:** When servicing, do not approach the LASER exit with the eye too closely. In case it is necessary to confirm LASER beam emission, be sure to observe from a distance of more than 30cm from the surface of the objective lens on the optical pick-up block.
- VARNING:** När underhållningsarbeten utförs, närma dig försiktigt och se inte på laserutstrålningen på för nära håll. If all det är nödvändigt att betrygga laserstrålens utströmning. Var säker att kontrollera detta från ett avstånd av mer än 30cm (11.81 inch.) från den objektiva linsens yta på den optiska utsändningspunkten.
- ADVARSEL:** Når repareringsarbejdet udfoeres, naerm dig forsigtigt og se ikke på laserudstrålningen på for naer hånd. It ilfaeldet at det er noedvaendigt at bestemme laserstrålens udstråling. Vaer sikker på kontrollere dette fra en afstand af mere end 30cm (11.81 inch.) fra den objektive linses overflade på den optiske udsendningspunkt.
- VAROITUS:** Silmiä on varottava viemästä liian läbeile Laser-poistokanavaa huoiion aikana. Jos on välttämätöntä varmistaa Laser-Säteen päästö, pysyttels sitä tarkasteltaessa vähintään 30cm etäiytydellä optisen lukon objektiivilinssin pinnasta.

2. SERVICING NOTES

BEFORE SERVICING THE UNIT

Be sure to observe the safety notes attached on label, chassis, cabinet top, cabinet bottom and Printed circuit board.

1. CAUTION ON LASER BEAM MALFUNCTION

Do not try to access objective lens, when DISC is not on the tray.

When pick-up mechanism replacement is required, be sure to turn power off.

2. WHEN HANDLING PARTS

Tube, tape or insulating parts are used for separation or insulation purposes. Especially parts which generate excessive heat are kept away from PCB or any other sensitive parts. Therefore, when replacing parts, be sure to replace them in their original position.

3. WHEN FIXING WIRES

Wires should be fixed in such a way with cable-tie so they won't move.

When finished servicing, be sure to leave unit in it's original configuration.

4. USE SPECIFIED PARTS ONLY

The safety specification built into the electronics of this unit require that you use specified parts only. Do not use any other replacements. Using other parts can result in electrical and fire hazard.

5. AFTER SERVICING IS COMPLETE

After servicing is complete, check if there are any missing parts or that wires are properly fixed and any place where over heating or shock is likely to occur, can be found.

HANDLING THE OPTICAL PICK-UP

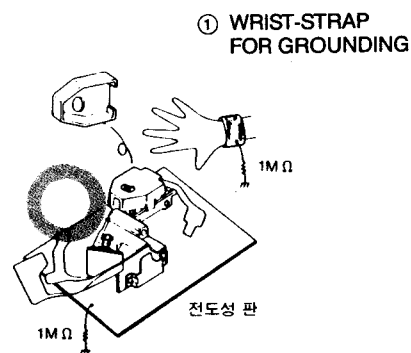
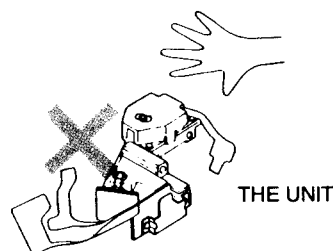
* The laser diode in the optical pick up may suffer electrostatic breakdown because of potential static electricity from clothing and your body.

The following method is recommended.

- 1) Place a conductive sheet on the work bench (The black sheet used for wrapping repair parts).
- 2) Place the set on the conductive sheet so that the chassis is grounded to the sheet.
- 3) Place your hands on the conductive sheet (This gives them the same ground as the sheet).
- 4) Remove the optical pick up block.
- 5) Perform work on top of the conductive sheet. Be careful not to let your clothes or any other static sources to touch the unit.

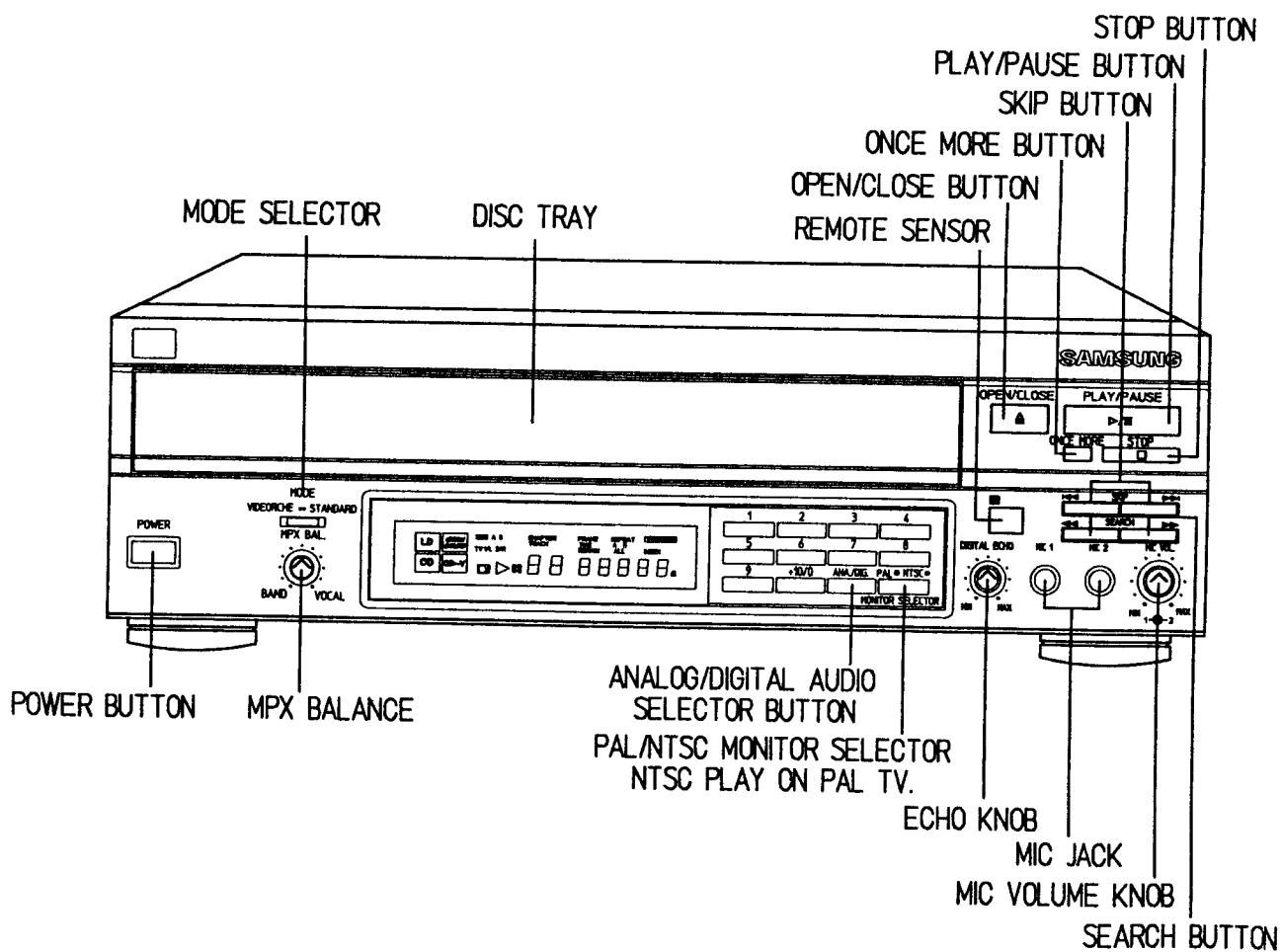
* Be sure to put on a wrist strap grounded to the sheet.

* Be sure to lay a conductive sheet made of copper etc. which is grounded to the table.

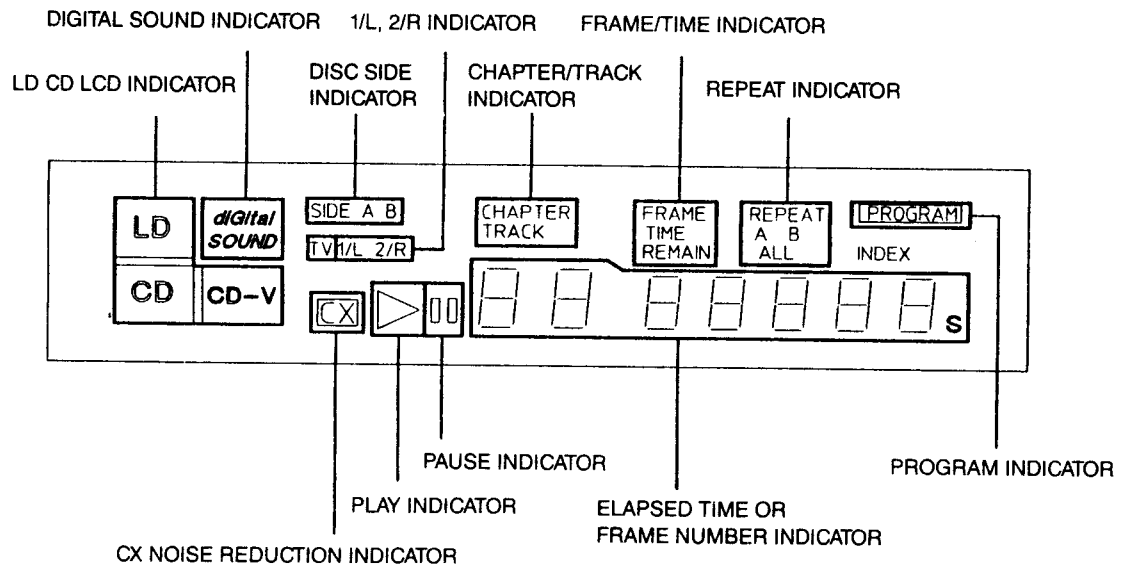


3. LOCATION OF CONTROLS

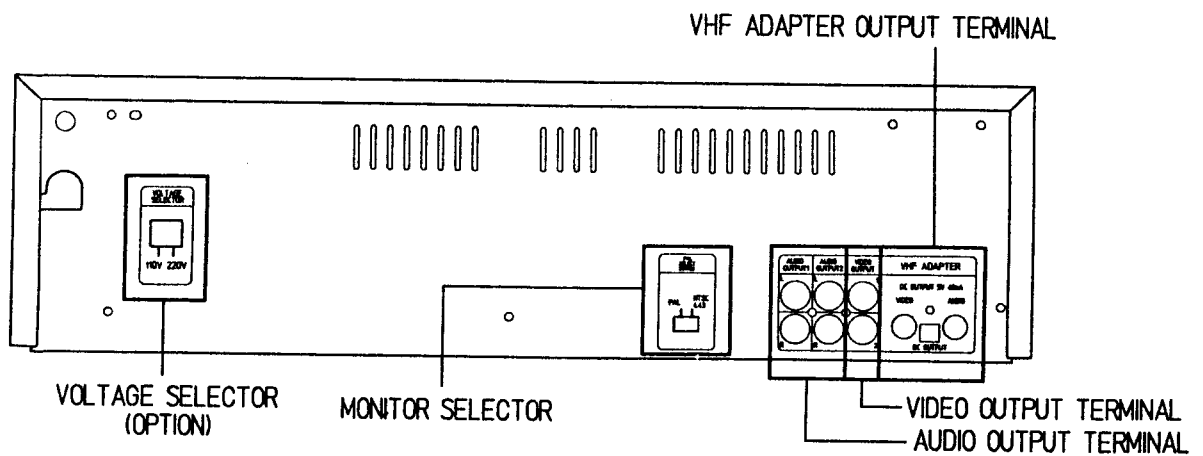
FRONT PANEL



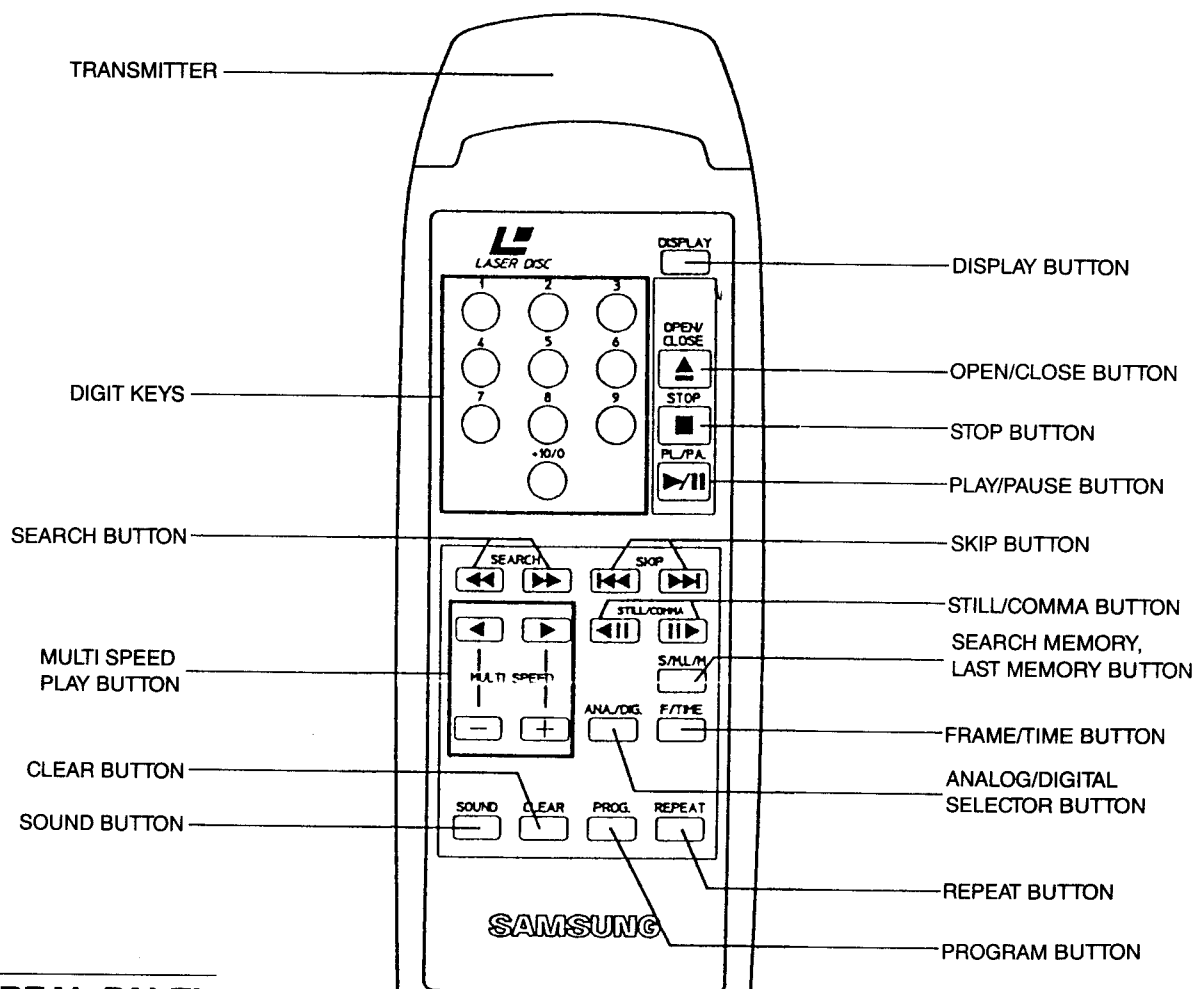
FUNCTION DISPLAY



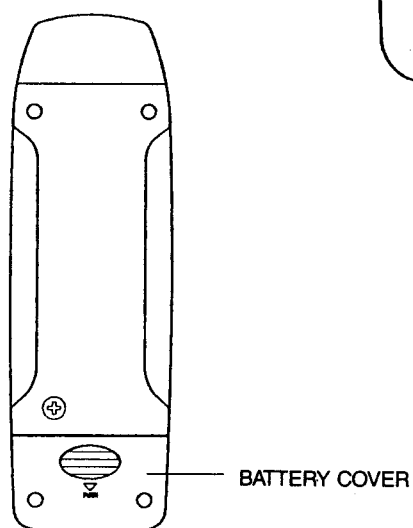
REAR PANEL



REMOTE CONTROL UNIT



REAL PALEL



4. DISASSEMBLY INSTRUCTION

4-1. DISASSEMBLY INSTRUCTION

1. CABINET-TOP

- (1) Release the 5 screws ① from both sides and back of unit. (Figure 1)
- (2) Hold Cabinet-Top and pull up.

2. CHASSIS BOTTOM

- (1) Remove Cabinet-Top.
- (2) Release 6 screws ② at the bottom of the unit.
- (3) (Figure 2)
Hold Chassis Bottom and pull up.

3. CHASSIS REAR

- (1) Remove Cabinet-Top.
- (2) Remove Chassis Bottom.
- (3) Remove 7 screws ③ at the bottom of unit. (Figure 3)
- (4) Hold Chassis Rear and pull off the unit.

4. TRAY ASSEMBLY

- (1) Remove Cabinet-Top.
- (2) Position tray out halfway. (Figure 1)
- (3) Pull Hooks ④ by the side and take the tray completely out. (Figure 1)

5. MAIN PCB, PAL PCB

- (1) Remove Cabinet-Top.
- (2) Remove Chassis Bottom.
- (3) Remove Chassis Rear.
- (4) Release 4 screws ⑨ from Main PCB and 3 screws from PAL PCB.
- (5) Disconnect Connecting Wires.
- (6) Remove PCB holder ⑩. (Figure 3)

6. TRAY MOTOR ASSEMBLY

- (1) Remove Cabinet-Top.
- (2) Remove Chassis Bottom.
- (3) Remove Chassis Rear.
- (4) Remove Tray.
- (5) Remove MAIN PCB.
- (6) Remove 3 screws ⑫ at the bottom of Tray Motor. (Figure 3).

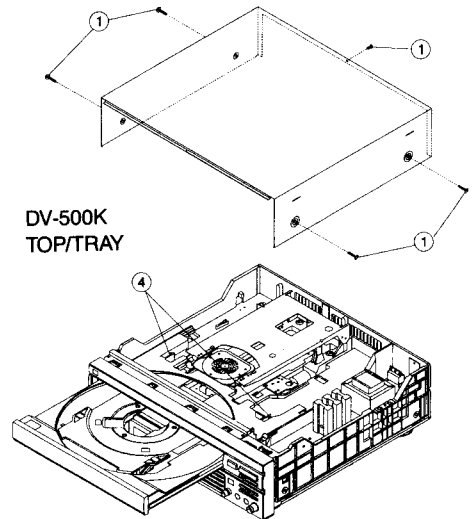


Figure 1.

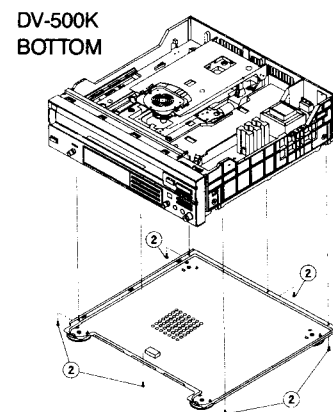


Figure 2.

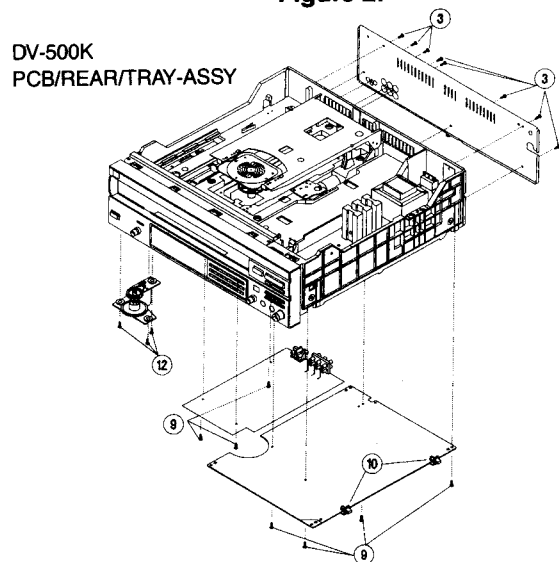


Figure 3.

7. PANEL-FRONT

- (1) Remove Cabinet-Top.
- (2) Remove Tray.
- (3) Release 4 screws ⑤ from the top of the Front Cabinet.
- (4) Release 3 screws ⑥ from the Bottom of the Front Cabinet.
- (5) Pull PANEL-FRONT towards you.

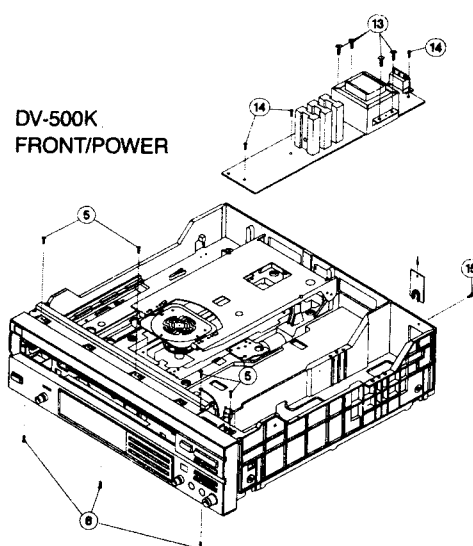


Figure 4.

8. FRONT PCB

- (1) Remove Cabinet Top.
- (2) Remove Tray.
- (3) Remove PANEL FRONT.
- (4) Release 10 screws ⑦ from FRONT PCB. (Figure 5)
- (5) Remove KNOB-VOLUME.

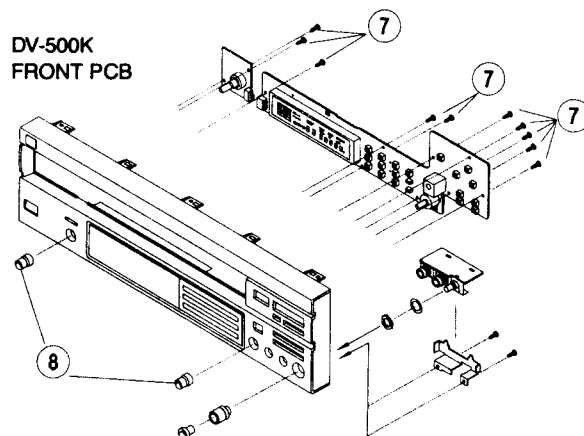


Figure 5.

9. DECK ASSEMBLY

- (1) Remove Chassis Top.
- (2) Remove Chassis Bottom.
- (3) Remove Chassis Rear.
- (4) Remove Tray.
- (5) Release 4 screws ⑪ from DECK. (Figure 6)
- (6) Disconnect 3 connecting wires from the DECK Assembly.

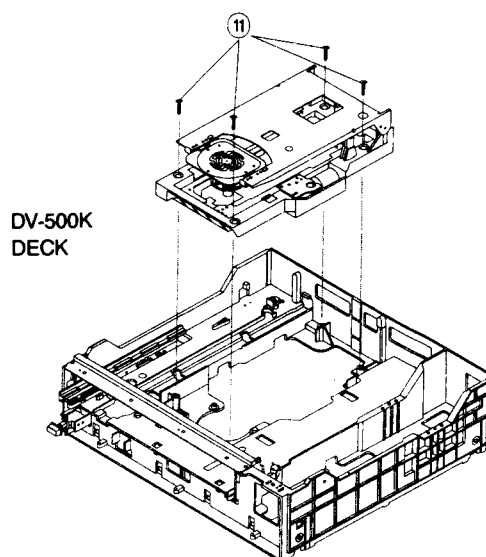


Figure 6.

10. POWER PCB

- (1) Remove Cabinet-Top.
- (2) Release 4 screws ⑬ from both sides of transistor. (Figure 4)
- (3) Release 3 screws ⑭ from POWER PCB.
- (4) Release screw ⑮ from rear. (Figure 4)
- (5) Disconnect connecting wire from POWER PCB.

5. CIRCUIT DESCRIPTION

5-1. PICK UP

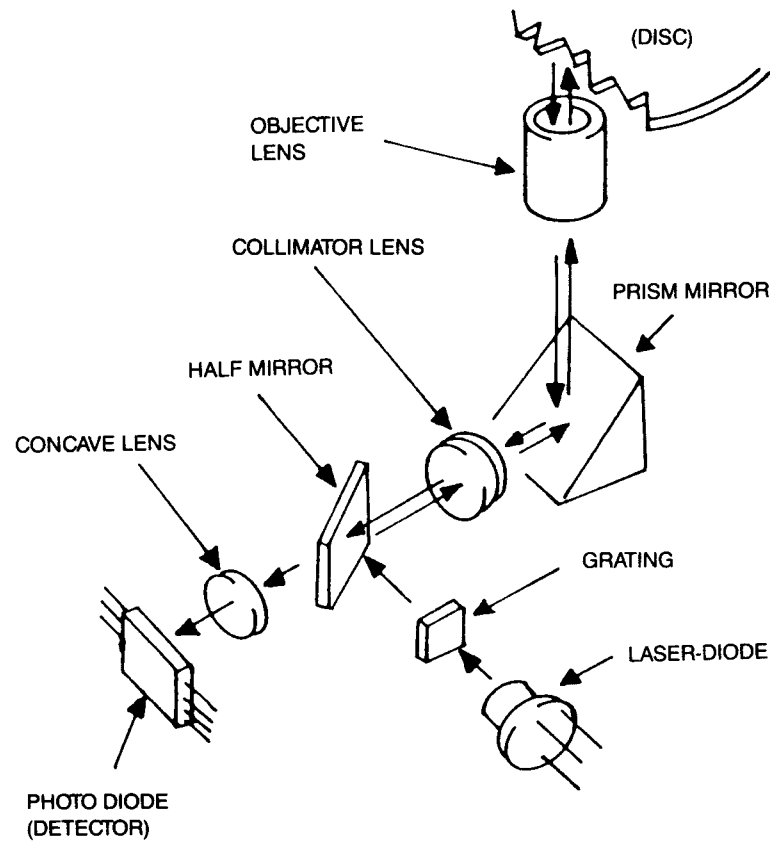


Figure 1. Optical Block

As seen in Figure 1 the linear polarized light from the laser diode is divided into 3 beams by the grating. The two beams at both sides are for tracking detection and the center beam is used for focus error and pit signal detection. The 3 split beams reflect in a propagation direction 90° by the half mirror and are changed into collimation beam by the collimator lens and send off light to the disc in a right angle by the prism mirror. This beam enters objective lens to 2 axis actuator in a radial direction as well as up and down over a disc focuses upon certain spots on disc pits, the beam is then diffracted by disc pits.

The reflected beam from the disc passes through the objective lens and through a Half-mirror and finally hits a photo diode detector in the reverse direction of it's optical axis.

The plane concave lens moves to make the 3 beam space wider and the objective lens moves to access 2 beams for tracking detection to each photo diode. The half mirror not only functions to divide beams but creates astigmatism for focus control error signal detection.

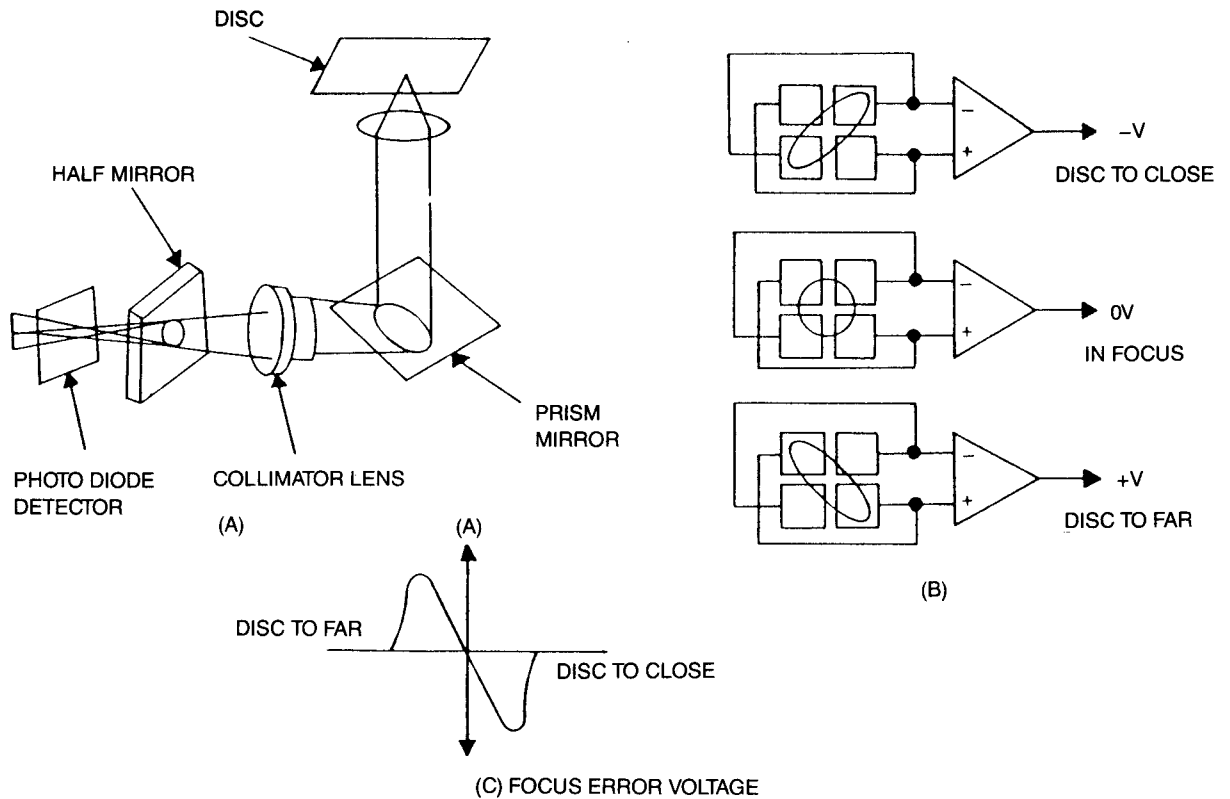


Figure 2. FOCUS Control Signal Detection

Figure 2 shows how the focus control error signals are basically detected. The beam passed through the Half-mirror hits the Photo diode. When a disc moves away from the focal point of objective lens, an oval beam like (b) is projected on the Photo diode and a focus error voltage like (c) will be detected. Normally, ± 1 st order diffraction beam divided at the Grating is focused so that a slight spot deviated from the same track can be focused upon the objective lens as shown in the Figure 3 and reflecting beams are detected from both sides (A, C) of photo diode for signal detection respectively thus it's detected by the amount of track and spot deviation by the difference of A & C.

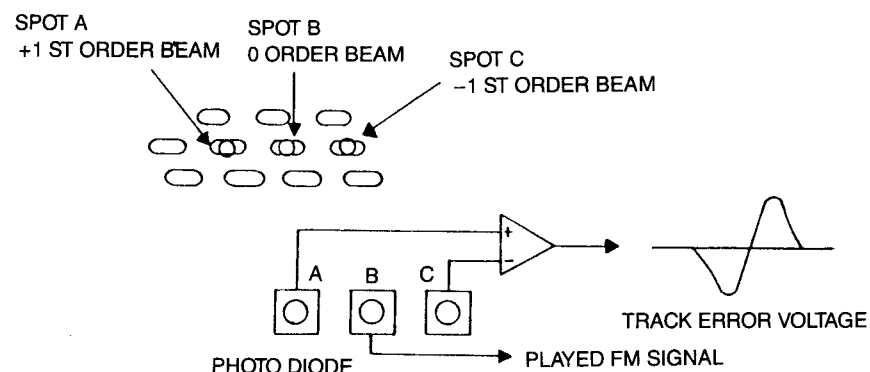


Figure 3. TRACK Control Signal Detection

Figure 4. shows a circuit which detect RF signal, focus error, tracking error and 4D sum signal from beams emitted to photo diode. Focus error signal $\{(A+C)-(B+D)\}$ is extracted by OP Amps for low frequency of A ~ D. Objective lens driving servo is activated to make this signal ϕ . The 4D SUM signal is used to turn 'ON' the Focus servo loop.

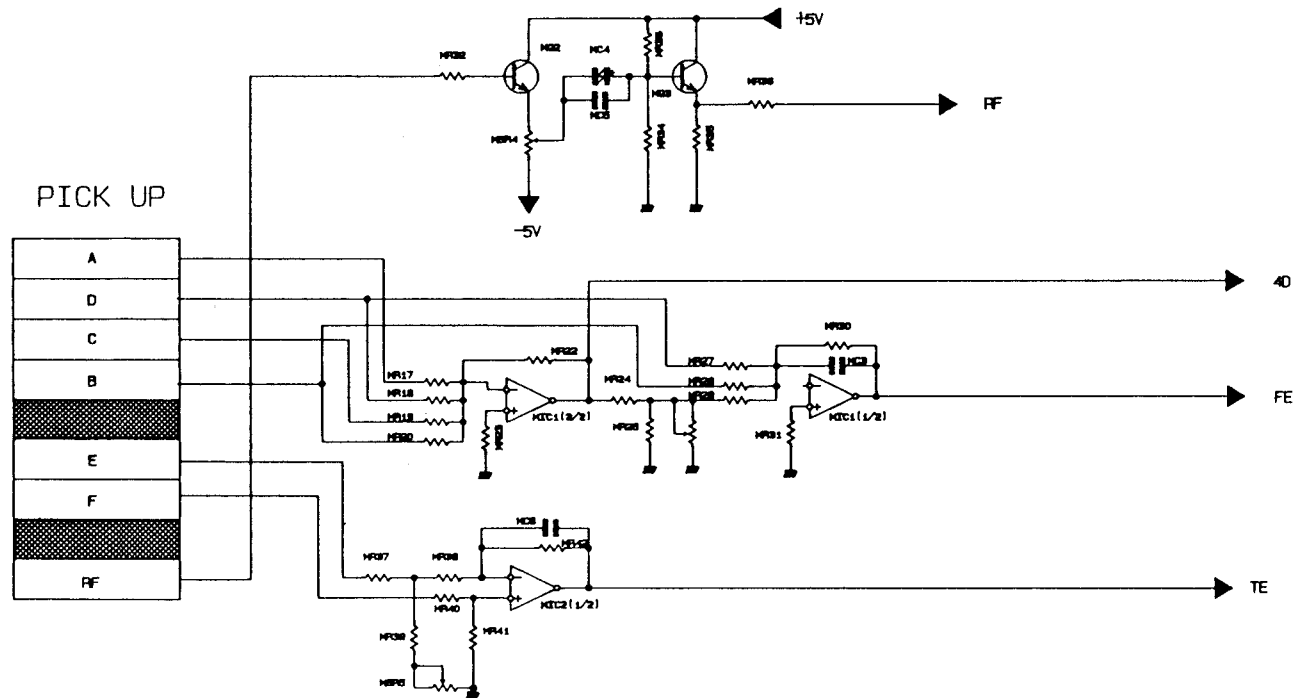


Figure 4. PICK UP Circuit

5-2. FOCUS, TRACKING, SLIDER, TILT SERVO CIRCUIT

A) OUTLINE

- **FOCUS, TRACKING, SERVO CIRCUIT:** It drives the objective lens to accurately follow surface vibration and eccentricity of the disc using the error signal generated by the photo diode.
- **SLIDER SERVO CIRCUIT:** It makes the pick-up assembly track the disc as it moves toward the inside or the outside of the disc.
- **TILT SERVO CIRCUIT:** It detects and corrects disc tilt loading a disc.

These circuits along with the Phase Compensation Amplifier, current source, Logic Circuit operating the analog section and the A/D conversion circuit which operates the Logic are all included in the Servo IC (WIC1 – HA11529) on the Servo Board.

B) DESCRIPTION OF FUNCTION (WIC 1)

1) FOCUS SYSTEM

- FOCUSING OPERATION:** It makes lens up/down adjustments and operates by closing the Focus-Loop when the Diode Sum (4D Sum-pin 3) and the Focus Error (pin 4) inputs satisfy the Focus Lock conditions.
- REFOCUSING:** If DSUM (pin 3) input is less than +0.4V (i.e. due to a spot or fingerprint on the disc, or outside oscillation due to warping), it opens the Focus-Loop and at the same time moves the lens up and down until the Focus Lock conditions are satisfied, at which time it closes the Focus-Loop.
- CD/LD CONVERSION:** It converts the Loop Gain and Phase Compensation response of the Focus Servo according to whether the disc currently being played is LD or CD.

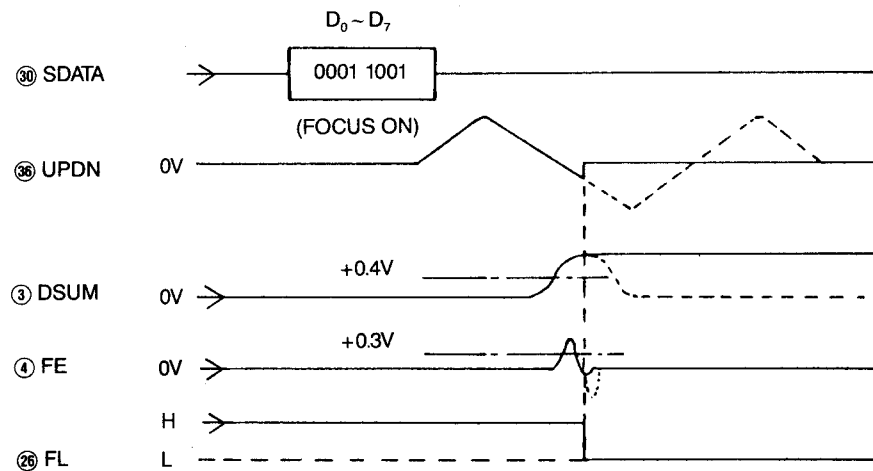


Figure 5. Timing Charts for Focus Operation

a) **TRACKING JUMP OPERATION:** Track jump starts when JUMP (pin 27) receives a positive pulse at its input and the acceleration and reduction pulse is switched by the zero-crossing of the tracking error signal. SW12 and SW24 are operated jointly during the jump period. SW12 decreases the gain of the high frequencies during the jump period by changing the Tracking Loop response. SW24 accelerates the zero-crossing of the tracking error signal, compensates the time delay of the analog circuit and applies a jump pulse to the Actuator. The serial data transmission (pin 30) specifies whether it is a forward or reverse jump.

Timing diagram for the acceleration and reduction pulses. The diagram shows the states of SDATA, JUMP, TE, and TDR signals over time. The acceleration pulse (T) is marked by a dashed vertical line. The reduction pulse (T) is marked by a dashed vertical line. The TDR signal is shown as a square wave pulse. The TE signal is shown as a triangular wave pulse. The JUMP signal is shown as a square wave pulse. The SDATA signal is shown as a square wave pulse. The diagram also shows the tracking error signal (TE) and the current (TDR) during the acceleration and reduction phases.

Timing diagram for the JUMP command. The diagram shows the relationship between the JUMP signal, Tracking Error Signal, TE signal, and TDR signal. A data bus $D_0 \sim D_7$ is shown at the top with the value 01 1001. The JUMP signal transitions from L to H. The Tracking Error Signal and TE signal show a characteristic dip and rise. The TDR signal transitions from 0 to $+50\mu A$ and back to 0. Time intervals T are marked at the bottom.

Figure 7. Timing Chart of Reverse Jump

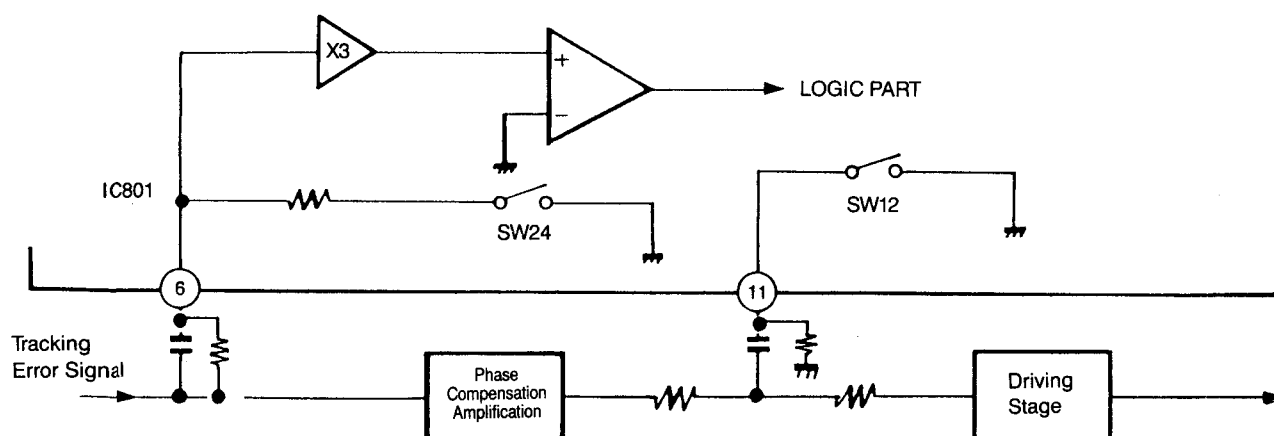


Figure 8. Tracking Jump Circuit

14

3) SLIDER SYSTEM

a) **NORMAL PLAYBACK MODE OPERATION:** During normal PLAY operation, the DC component of the Tracking Actuator is modulated and converted into a PWM by SCOMP1 or SCOMP2. The triangle wave output from SCOMP1 or SCOMP2 is generated by the capacitor connected to SLP (pin 20), and turns on either SW16 or SW17 while the accelerating pulse is output on SDR1 (pin 18).

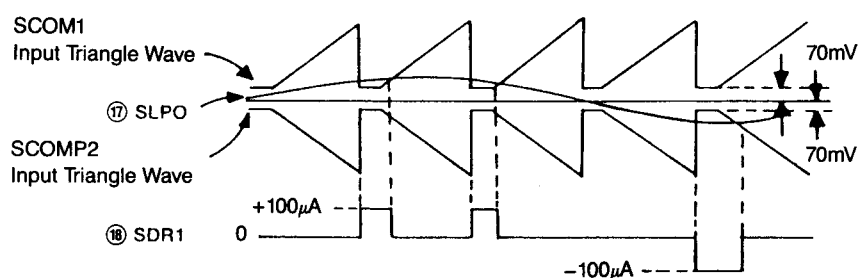


Figure 9. Timing Chart in Play

b) **SCAN MODE OPERATION:** During scanning, the serial data transmission signal (pin 30) determines whether output is from SDR1 (pin 18) or SDR2 (pin 19).

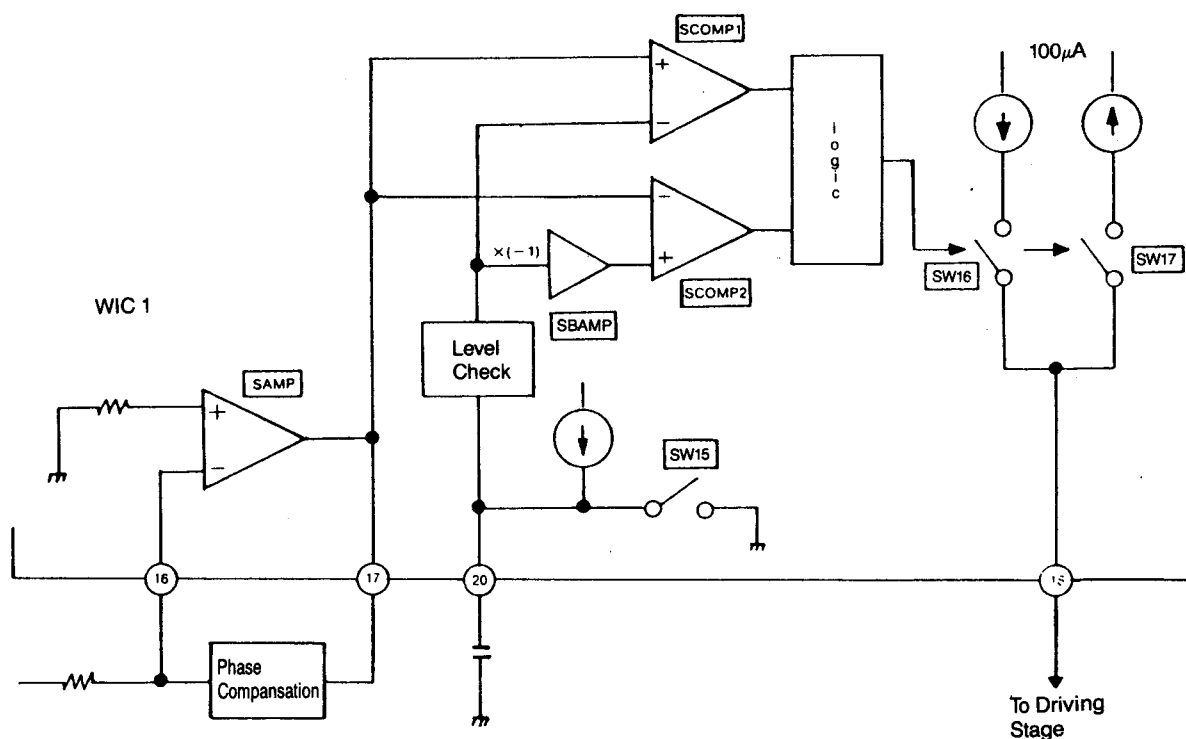


Figure 10. SCAN Phase Compensation Circuit

4) TILT SYSTEM

a) **TILT LOOP OPEN/CLOSE:** The Tilt Servo is controlled by SDATA (pin 30).

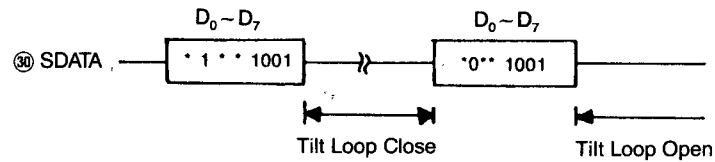


Figure 11. Tilt Data

b) **TILT SERVO OPERATION:** The tilt error signal is input to the Window Comparator TCOMP1 and TCOMP2, and the drive signal is output from TIDR (pin 24). The drive signal is turned on when the error voltage is over the DRV-ON voltage and turned off when it falls below the DRV-OFF voltage (see Fig. 22). The DRV-OFF voltage can be adjusted at the TEST pin (pin 21).

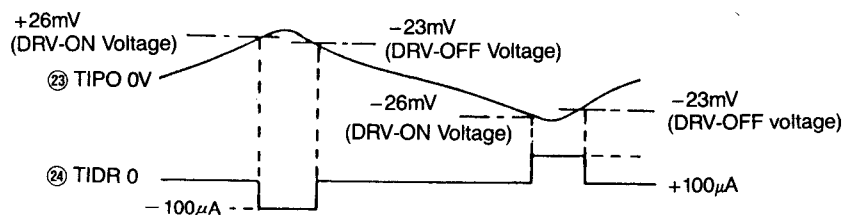


Figure 12. Tilt Timing Chart

In PLAY, the Tilt Servo Loop is open when the laser pick-up reaches the outer periphery of the disc (after 40,000 frames on a 12" CAV disc; after 40 minutes on a CLV disc; after 12 minutes on an 8" CLV disc; after 2 minutes of the video section of a CDV), after which the slope of the laser pickup remains where it was when the Tilt Servo Loop was closed.

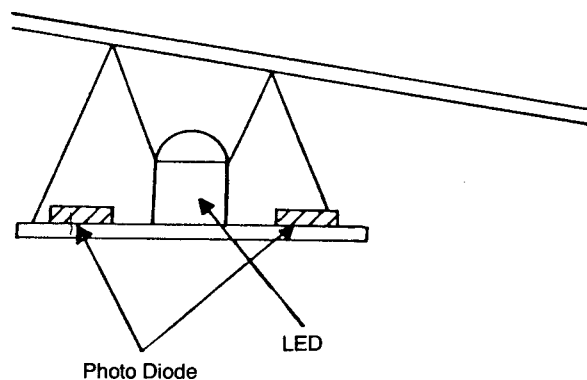


Figure 13. DISC Tilt Detection

5-3. VIDEO SYSTEM

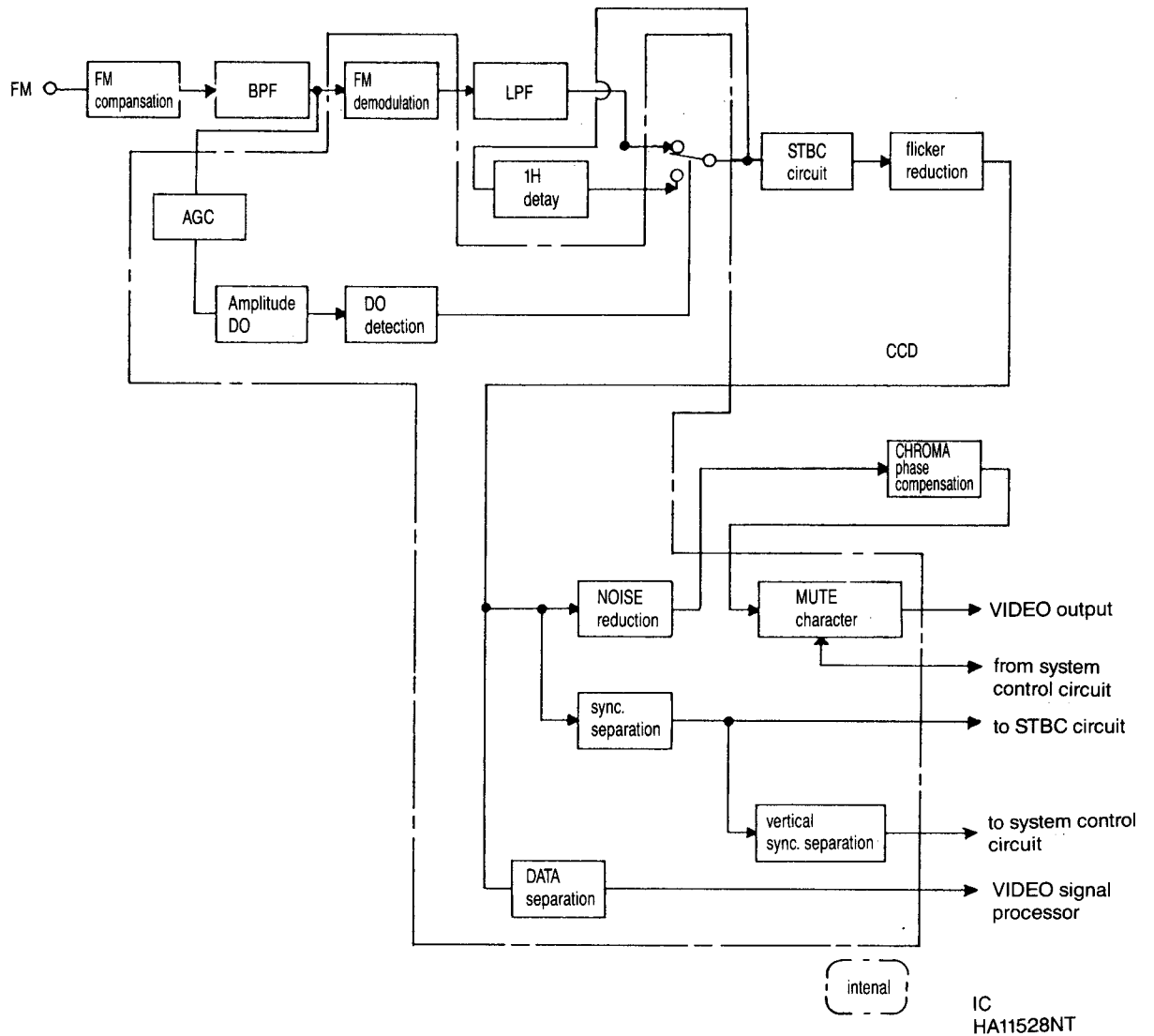


Figure 14. Block Diagram of VIDEO SECTION

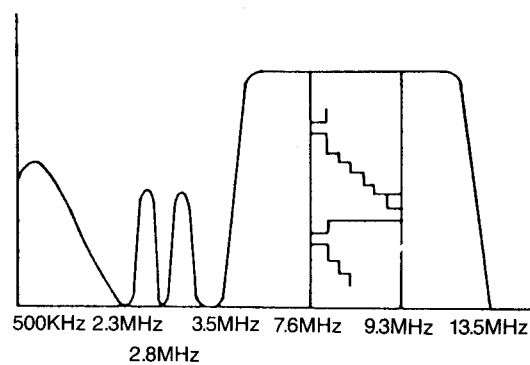


Figure 15. Frequency Spectrum

Video circuit is a circuit that demodulates FM signal obtained from a disc and generates Video signal in NTSC format. Figure 14 shows a structure of Video circuit. Video signal control IC, HA11528 has almost all basic functions built in, as shown in the Figure 14. A number of parts have been removed to lower cost and we tried to improve Video quality as follows.

- ① Reduction of linear distortion by adapting FM demodulation circuit with delay type multi-vibrator.
- ② Using Drop-out detection circuit with amplitude detection system in addition to the previous Frequency Detection System.
- ③ Using Noise reduction Circuit of Luminance signal separating type.

FM signal is being multiplexed as Video signal, Analog audio signal of both channels are modulated respectively. And EFM signal is being added on digital sound disc.

Video signal is being modulated to 7.6MHz on Sync tip and to 9.3MHz on 100% White and video signal has a frequency range of 3.5 ~ 13.5MHz contained chroma double side band.

FM signal in the pick-up is input to FM Compensation circuit. Since in CAV disc relative velocity between inner & outer periphery of a disc and Actuator is slow, bit pitch is short on the disc it is that compensate to decrease high frequency component of the pick-up.

It applies peaking on a high frequency component by Equalizer signal. In FM compensation circuit output, it makes FM signal response flat.

And in CLV disc, as the relative velocity is constant regardless of position of a disc, equalizer signal is same state of the inner side of the CAV disc.

The compensated FM signal is input to Drop Out Detection circuit and at the same time only VIDEO FM through Band Pass Filter (3.5 ~ 13.5MHz) of next stage and it applies to FM demodulation circuit.

the demodulated FM signal is input, through LPF, to 1H Delay Circuit and Drop-Out Switch. Normal connected to the Output not related to the 1H delay circuit however, in case of drop-out caused by the see drop-out switch is to be turned on to the Output of 1H delay circuit by the drop out detection circuit.

In occurring drop out, the drop out sw changed to output 1H DELAY circuit, video quality reduction problem Video signal from the Drop-out switch is input to STBC circuit which performs time base correction and reduction circuit which erases DC component from the STBC circuit. Video signal passed through Flio reduces noise in the Noise reduction circuit and in picture quality adjustment circuit, is changed frequency hue in the CHROMA Phase Compensation circuit and output is reduced through the Character Adding circuit OUTPUT signal.

Character adding circuit adds character (Frame number, chapter number, unit status...) according to order circuit. Video signal passed through the Flicker reduction circuit is input to Sync separation circuit and output order to STBC circuit.

Vertical sync separation circuit separation vertical sync signals and outputs composite sync-signal (minus pulse) after 0.75H of the vertical sync-signals are separated. And the signal is input to the Data separation circuit which separates that signal recorded on the vertical blanking time and is output to system Control circuit.

5-4. AUDIO SYSTEM

The Audio circuit is a circuit which produces Analog Audio output demodulating 2.3MHz, 2.8MHz from FM Audio output demodulating for EFM at the low band of FM signal. In figure 16 Analog Audio circuit remove signal from FM signal and amplifies approximately 20 dB. The EFM signal in the low band of FM signal removed in the HPF and amplified in the Limiter. Through this procedure a certain peculiar sound (snow-no certain disc can be prevented. Limiter output is input to each 2.3MHz and 2.8MHz BPF and demodulated detector. In demodulated signals, time based error signals are removed and switched (main/sub).

Therefore in the CX noise reduction circuit. Analog output is gained without noise. EFM signal at the low by demodulated in the Digital Audio circuit.

Digital sound of LD disc extracts only EFM signal component by passing from the 3MHz LPF OUTPUT the 7MHz LPF. Because the recording signal, in this case, is only EFM signal component. Frequency character in the EQ circuit. Which signal of these 2 is to be output is determined according to CD/LD signal in the System control circuit CD, motor control error signal is generated from the digital signal processor and audio signal is gained in a D/A conversion. Digital/Analog Output is obtained by switching the Digital Audio and Analog Audio by MAIN/SUB switching.

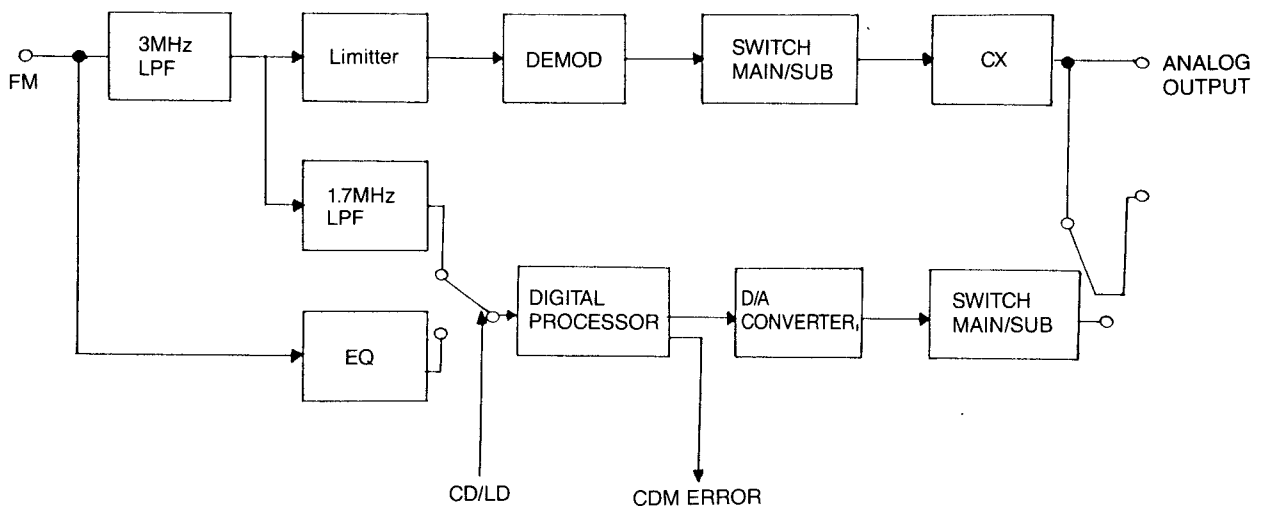


Figure 16. Audio Block Diagram

5-5. STBC (Spindle Time Base Correction) CIRCUIT

The STBC circuit serves to correct and regenerate the signals recorded on a disc in the Time Base Correction circuit in order to reproduce the same signal as when recorded on a disc. This circuit consists of SPDL (Spindle) motor servo and CCD servo which rejects signals for time-axis variation of high frequency which can not be rejected with only SPDL motor servo. The FM signal obtained in the Pick-up circuit is demodulated in a Video circuit and input to CCD.

Video signal passed through the CCD is input to Horizontal sync separation circuit.

This regenerated horizontal sync signal is compared phase and frequency with referential horizontal sync signal and controls CCD and spindle motor in accordance with this output of compared signals. Therefore the video signal passed through CCD is output as a form of signal with time-axis variation rejected.

The input signal of VCO circuit is a control signal of SPDL motor and input to the SPDL motor circuit and controls rotation of a disc to be a certain specified revolutions.

In the SPDL motor servo, circuit switching is needed as the loop-gain is different according to disc size (12 inch, 8 inch CD/CDV) and type (CAV, CLV).

This signal is controlled by System control circuit and uses serial data for data processing.

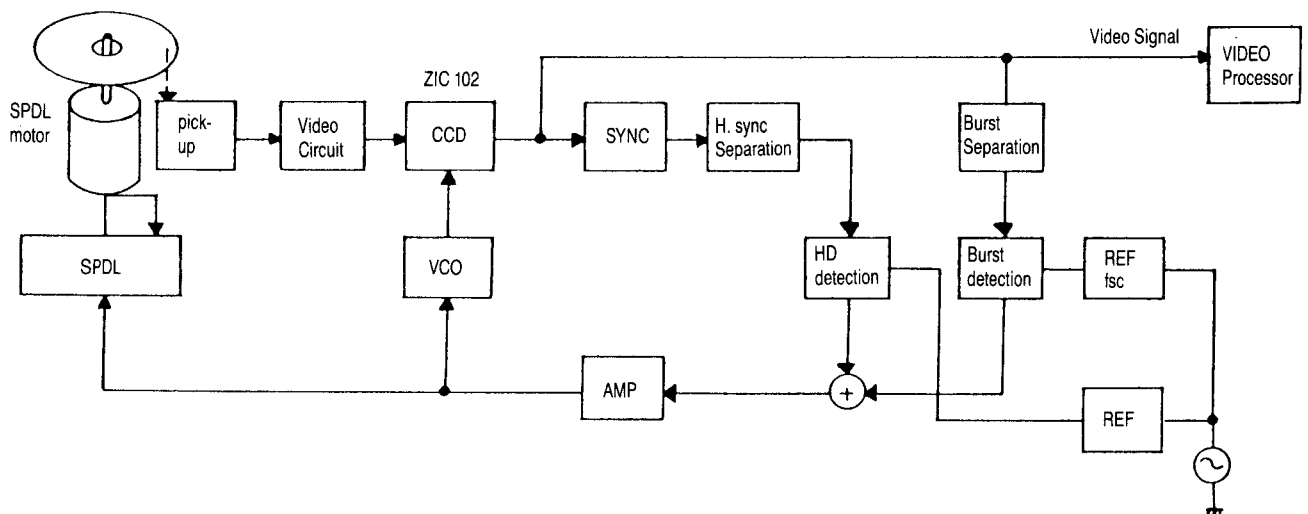


Figure 17. STBC Block Diagram

5-6. POWER SUPPLY CIRCUIT

AC power source is rectified to $\pm 5V$ and $\pm 8V$. $\pm 14V$ is used to drive spindle motor and AC voltage and $-33V$ is used to drive FLT display unit and Front Micom.

MAIN board power source is supplied by $\pm 5V$. $\pm 14V$ is used to drive spindle motor and Pick-up actuator. $\pm 14V$ supplied to MAIN PCB is converted $\pm 8V$ and Audio circuit is supplied by $\pm 8V$.

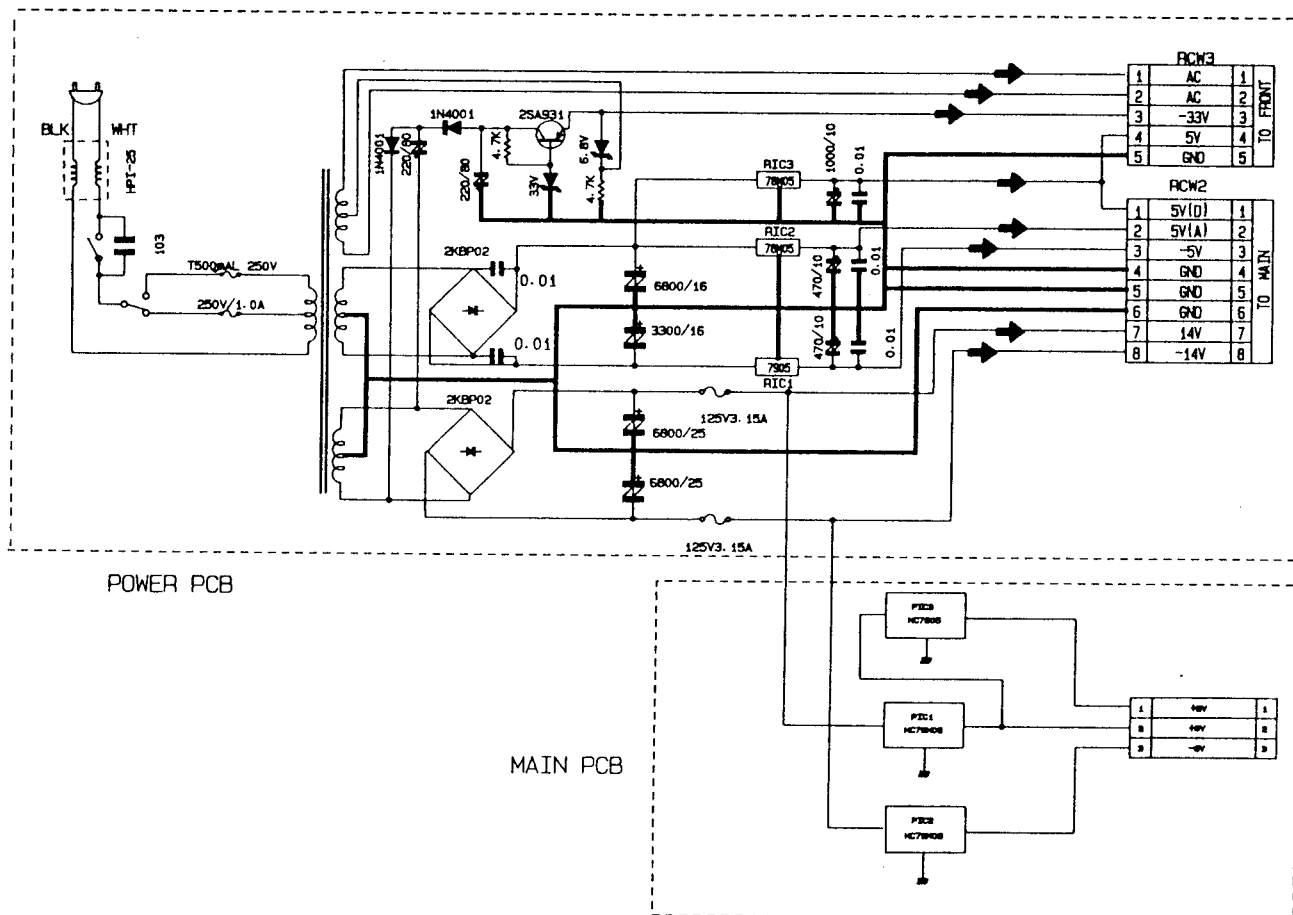


Figure 18. Power Supply Circuit

5-7. SYSTEM CONTROL

(1) OUTLINE

System control section is composed of Pick-up servo control section, STBC section and FRONT PCB. System control circuit consist of 2 MICOMs. 2 MAIN Micom controls servo circuitary, DSP circuit and Data Processor. FRONT Micom receives REMOCON Data, and controls functions of unit and FLT display.

(2) MICOM

Servo control Micom (MAIN Micom) has 512 byte RAM (8 bit) and 16K byte ROM built in and uses 6MHz of clock signal.

Mode control Micom (FRONT Micom) has 768 nibble RAM (4 bit) and 16K byte ROM built in and uses 6MHz of clock signal.

Communication between two Micom is performed by the connected 5 communication line.

(3) DATA PROCESSOR

WIC3 is Data Processor LSI. Internal block diagram is shown in Figure 19.

Generally the Data Processor has, as described in Figure 19, 3 major functions when classified broadly.

a. DISC CODE READING

Data processor reads the 24 bit code of VIDEO disc specifications recorded on LD. And Data processor regenerates a new clock which can read codes by dividing the clock (14.331818MHz) oscillated by CX1.

And set timing by H-SYNC, V-SYNC to be input at pin 4, 5 of WIC 3 and reads desired codes according to the data from pin 6 of WIC 3.

b. NTSC SYNC SIGNAL GENERATION

WIC 3 generates a NTSC Sync signal that is required to display characters. CSYNC(pin 27) BF(pin 24) BSC(pin 25) BLUE(pin 26) signal are output by dividing the clock oscillated in WIC 3.

c. ON-SCREEN DISPLAY GENERATION

It generates display character signals from character generator and outputs to pin 22 of WIC 3, and at the same time, it generates character background and outputs to pin 23 of WIC 3.

Interfacing with micro processor.

d. INTERFACING WITH MICRO PROCESSOR

The communication with Micro-processor is performed through ATN(pin 10), STB(pin 9) ACK(pin 18) TX/RX(pin 19) and 6 data lines (pin 11, 12, 13, 15, 16, 17).

(4) COLOR BACKGROUND CIRCUIT

Color background signal is generated mixing C-SYNC, BLUE, BSC, BF signals which are generated at SL220B (WIC 3) by the WQ33. The basic color of color background signal is BLUE.

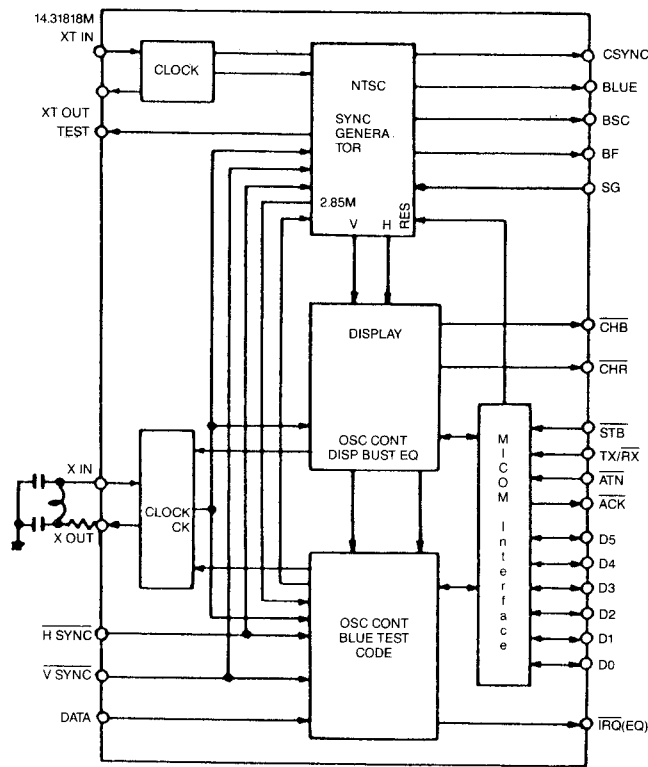


Figure 19. Data Processor

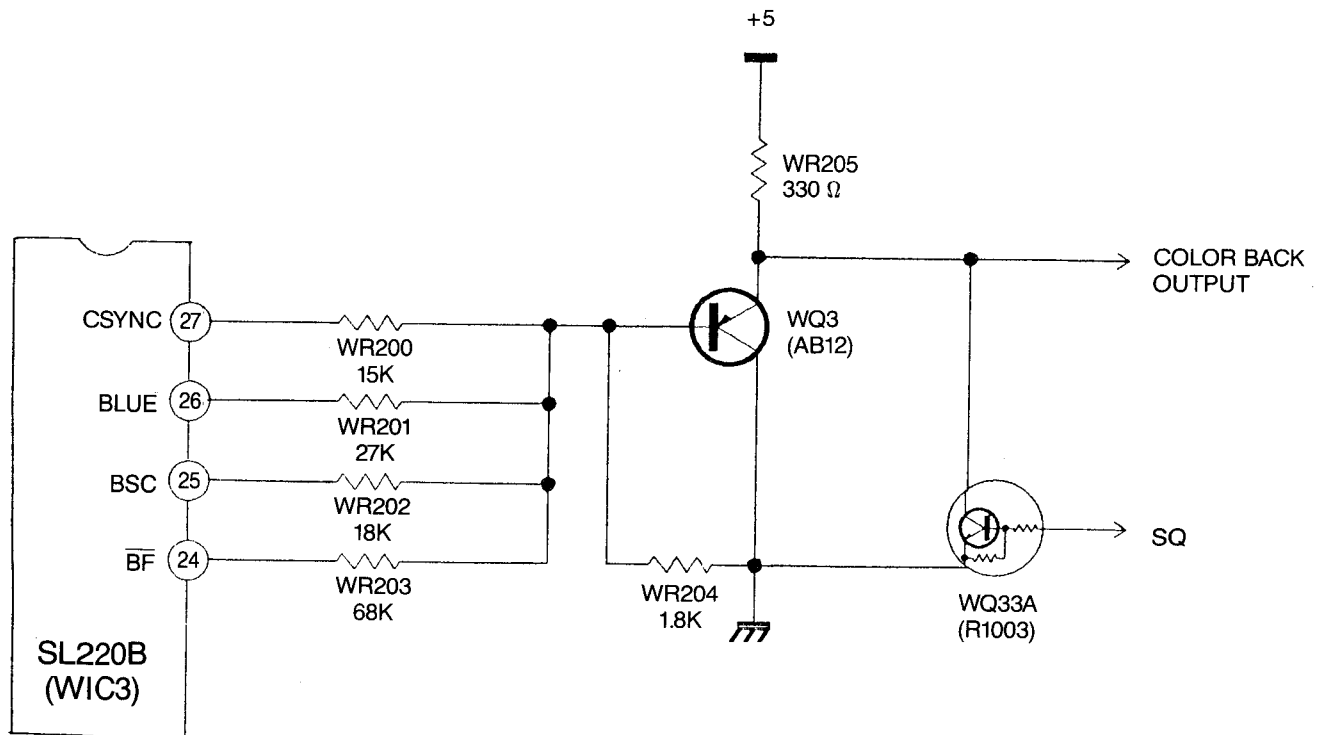


Figure 20. Color Back Schematic Diagram

5-8. SOFT WARE SECTION

(1) OUTLINE

MICOM FUNCTION DESCRIPTION IN SYSTEM CONTROL SECTION

1) SERVO CONTROL

- Focus, Tracking, Slider, spindle Servo is controlled through Servo LSI, stops the spindle by detecting FG signal.
- Protects processor in case of spindle lock failure by detecting FG signal.
- Controls on/off of Laser tilt servo.
- Detects pick-up position at the inner or outer periphery of a disc.

2) VIDEO CIRCUIT CONTROL

Switches Equalizer, TV/LDP

Controls Blue-Back screen Video Mute by the data processor.

3) AUDIO CIRCUIT CONTROL

Controls sound output, CX SYSTEM

4) KEY DATA INPUT CONTROL

Receives Key-switch input and designated key function.

5) REMOTE CONTROL SIGNAL CONTROL

Receives Remote Control signal data and judges & handles a designated key.

6) DISC CODE SIGNAL CONTROL

Decodes disc code through data processor and controls disc data.

7) CRT SCREEN DISPLAY CONTROL

Controls CRT screen display in accordance with Remote control input through data processor.

8) FRONT LOADING CONTROL

Controls Loading motor by detecting switch status when disc is loaded.

9) FRONT PCB DISPLAY CONTROL

Controls FLT display.

10) DIGITAL AUDIO CIRCUIT CONTROL

Controls DA circuit and detects digital disc signal from DA circuit and switches Digital/Analog signal.

11) DISC TYPE JUDGEMENT

Judges disc size (30cm, 20cm, 12cm/8cm) when disc starts rotating.

Judges CD/CDV on TOC data at inner most periphery of a disc.

12) MIS-CLAMP DETECTION

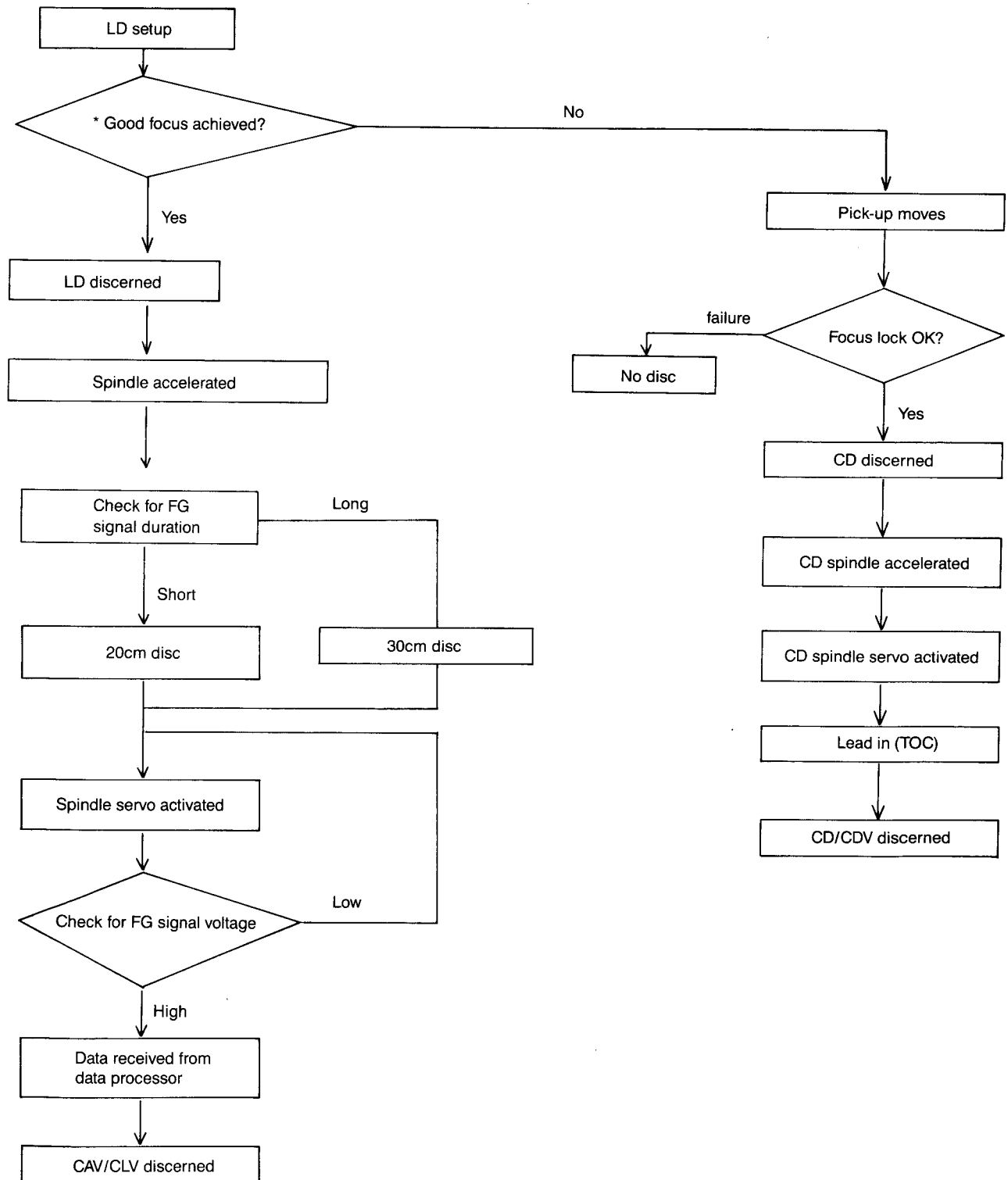
Checks for mis-clamp when a disc is not rotating after loaded and track crossing signals are over the specified number.

13) FOCUS DROP CONTROL

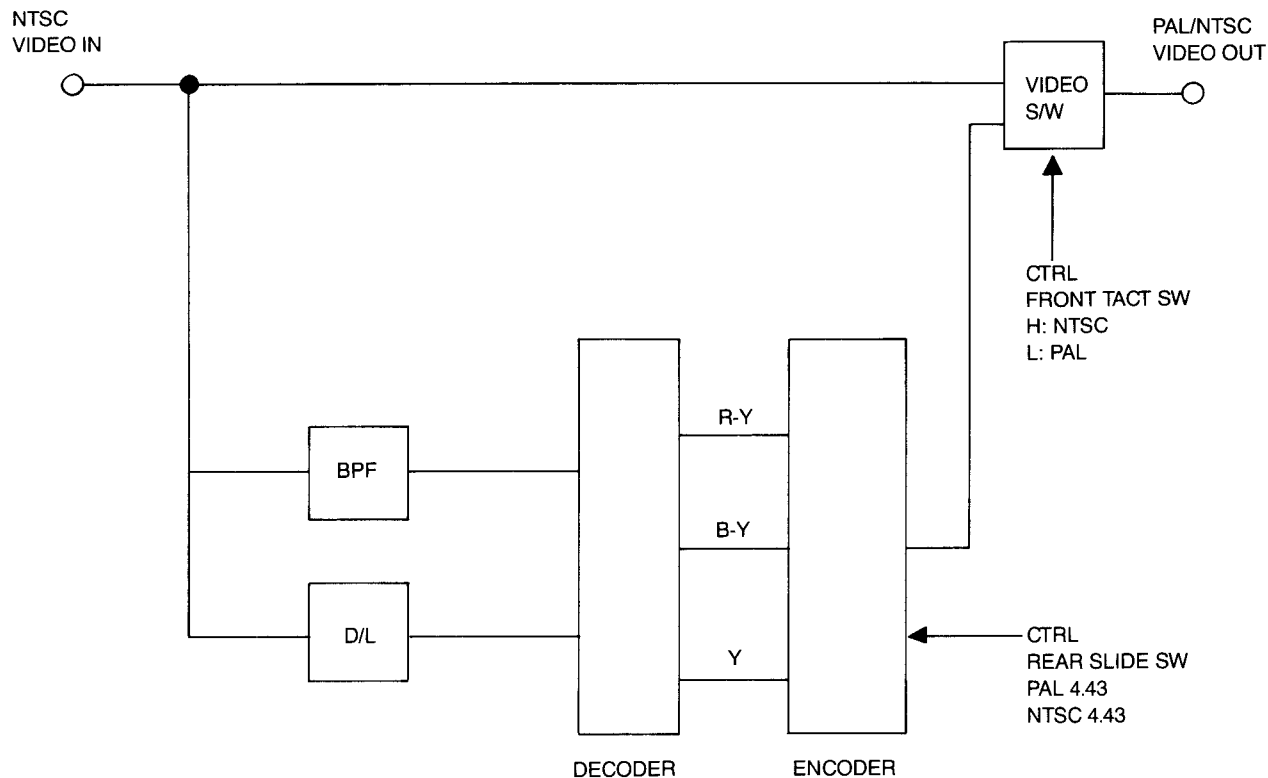
When focus lock signal drops out on PLAY or SEARCH mode, slider moves to position that drop out does not occur.

(2) DISCERNING THE KINDS OF DISC

This is a flow outline on how the unit discerns the kinds of disc.



5-9. QUASI PAL BLOCK



Video signal is output through video signal selector (IC 706).

Video input signals from CN707 of main PCB and are divided into Y and color signal and then input to encorder IC CXA 1229P.

Signal Y, B-Y, R-Y of encorder IC are transmitted to decorder and then PAL signal is finally output.

6. ADJUSTMENT

6-1. BEFORE MAKING ADJUSTMENT

Adjustment to this unit is not required because adjustment is already done during production procedure. However if readjustment is required, be sure to proceed in the order given.

MEASURING INSTRUMENT

1. OSCILLOSCOPE
2. DC VOLTMETER
3. MONITOR
4. FREQUENCY COUNTER
5. OSCILLATOR
6. VECTOR SCOPE

TEST DISC

1. SAMSUNG DEMONSTRATION DISC
2. YEDS-43 DISC
3. P8-II DISC

JIG PCB

Connect JIG PCB to WCW1 of MAIN PCB.

ADJUSTMENT ITEM

(1) GENERAL ADJUSTMENT

1. REF (Reference Frequency) adjustment.
2. CCDF (CCD frequency) adjustment.
3. PLL (Phase Lock Loop) adjustment.

(2) MECHA ADJUSTMENT

1. TILT BALANCE adjustment.
2. TRACKING BALANCE adjustment.
3. LD & CD BALANCE adjustment.
4. RF GAIN adjustment.

(3) VIDEO ADJUSTMENT

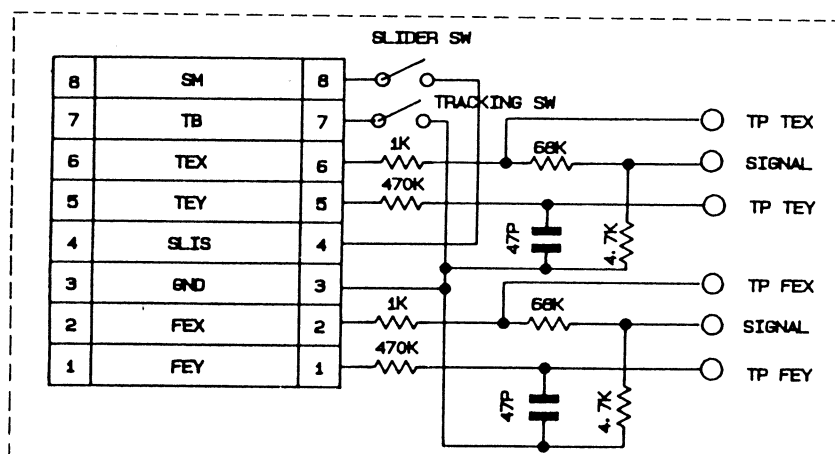
1. VL (Video Level) adjustment.
2. 1H DELAY adjustment.
3. DROP OUT adjustment.
4. PM adjustment.
5. AM adjustment.

(4) SERVO ADJUSTMENT

1. FOCUS GAIN adjustment.
2. TRACKING GAIN adjustment.

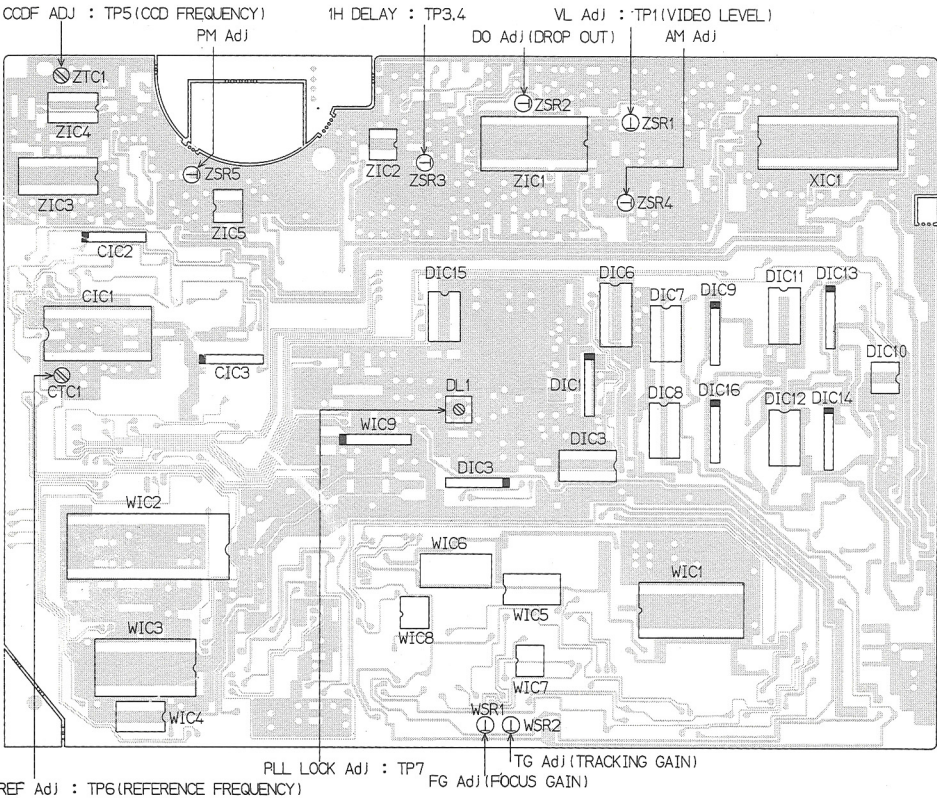
(5) PAL ADJUSTMENT

1. NTSC REF. FREQ adjustment.
2. PAL REF. FREQ adjustment.
3. BURST FRAG adjustment.
4. Y-LEVEL adjustment.
5. Color adjustment.
6. HUE adjustment.



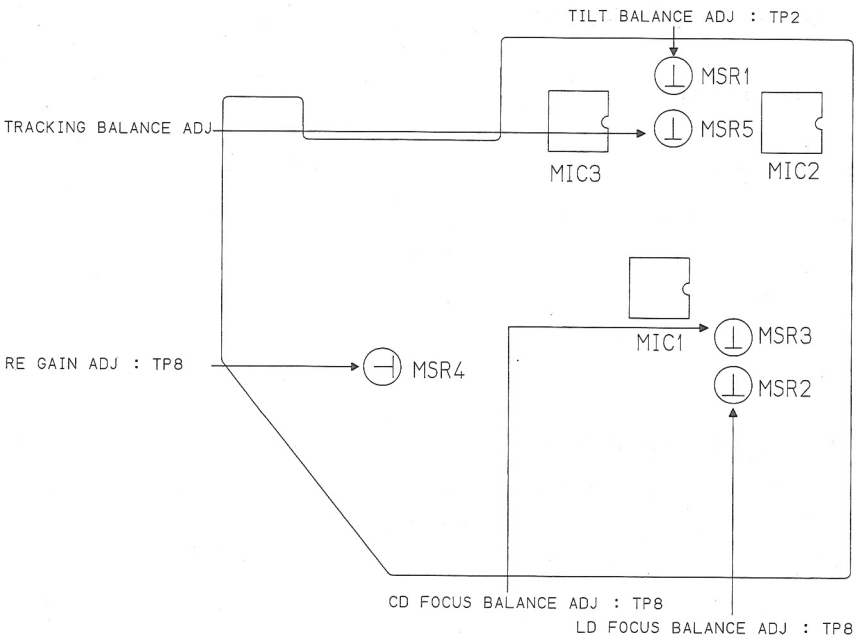
6-2. ADJUSTMENT POINT LOCATION

1. MAIN PCB

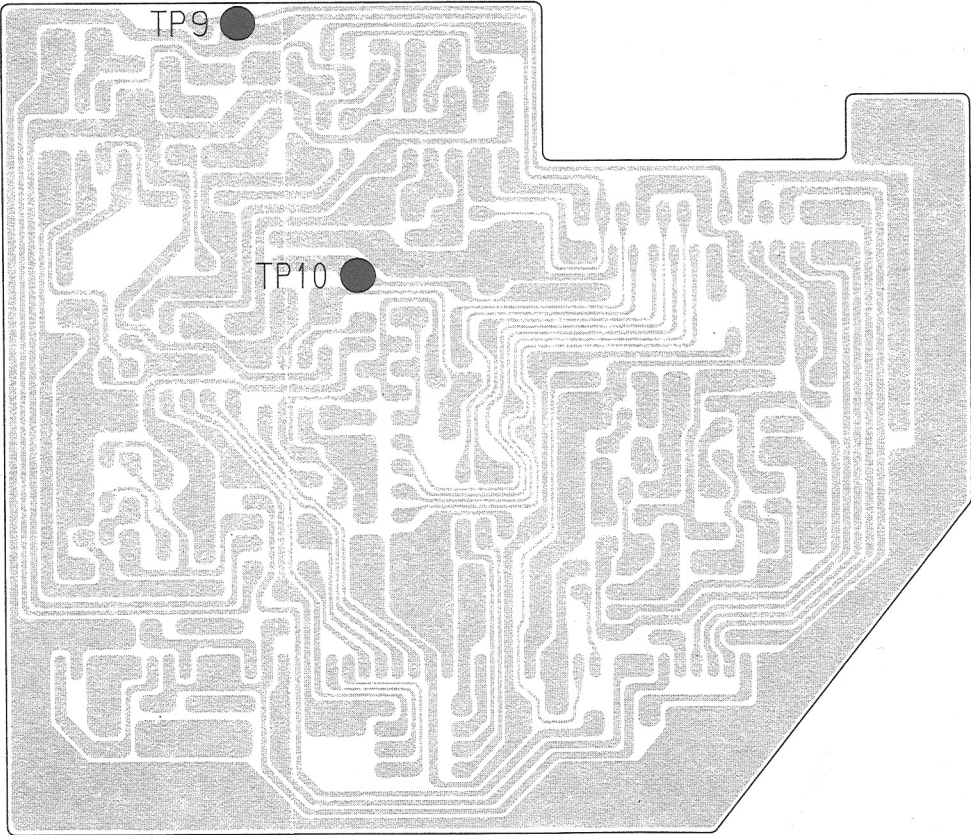


- TP1 : VI of ZCW1
- TP2 : TIE of WCW2
- TP2' : PIN 70 of DIC5
- TP3 : PIN 18 of ZIC1
- TP3' : PIN 41 of CIC1
- TP4 : PIN 20 of ZIC1
- TP5 : PIN 11 of ZIC3
- TP7 : PIN 8 of DIC2
- TP8 : PIN14 of IC5

2. DECK PCB



dv6001pu.u+29, August 10



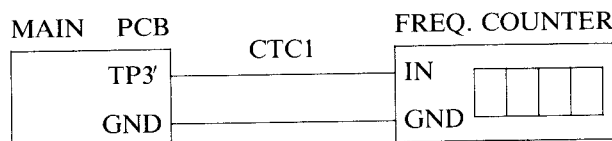
TP9 : PIN15 of MCW1
TP10: PIN14 of MCW1

6-3. ADJUSTMENT INSTRUCTION

I. GENERAL ADJUSTMENT

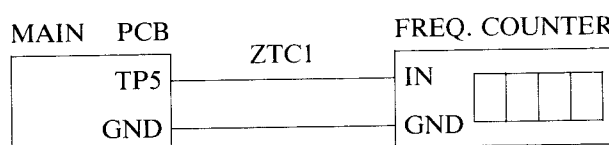
1. REF (Reference Frequency) Adjustment

- ① Turn power on and set the unit STOP mode.
- ② Adjust CTC1 so that frequency counter reads $3579.545 \pm 0.04\text{KHz}$.
- ③ Use 1 : 1 damping probe.



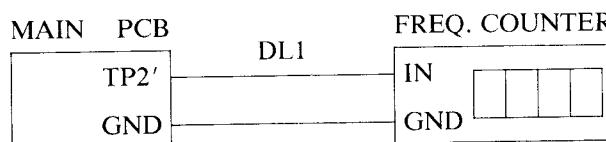
2. CCDF (CCD Frequency) Adjustment

- ① Turn power on and set the unit STOP mode.
- ② Adjust ZTC1 so that frequency counter reads $8.245 \pm 0.005\text{MHz}$. (TP5 : PIN 11 of ZIC3)
- ③ Use 1 : 1 damping probe.



3. PLL Adjustment

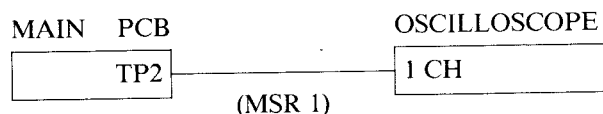
- ① Short JW242 and JW241.
- ② Turn power on.
- ③ Adjust DL1 so that the frequency counter reads 4.300MHz (TP2' : PIN 70 of DIC5)



II. MECHA ADJUSTMENT

1. TILT Balance Adjustment

- ① Insert SS-DEMON disc and press PLAY button.
- ② Set 1200 frame at STILL mode.
- ③ Adjust MSR1 so that the center of waveform at TP2 locates at 0V.
(TP2 : TIE PIN of WCW2)



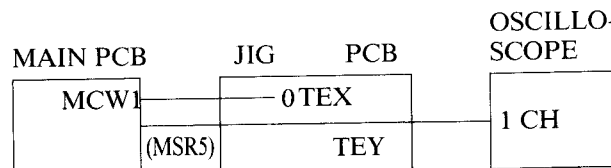
SETTING

MODE : CH1
TIME/DIV : 50msec
VOLT/DIV : 10mV
PROBE SETTING 10 : 1



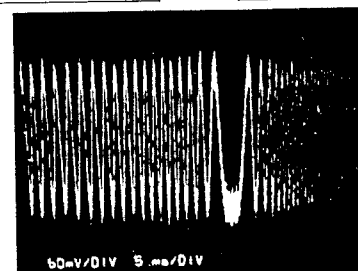
2. TRACKING Balance Adjustment

- ① Insert SS-DEMON disc and press PLAY button.
- ② Set 1200 frame at STILL mode.
- ③ Connect JIG PCB and turn off the Slider SW and turn off the Tracking SW.
- ④ Adjust MSR5 so that the center of waveform at TEY locates at 0V.
- ⑤ Turn on the Tracking SW and turn on the Slider SW.



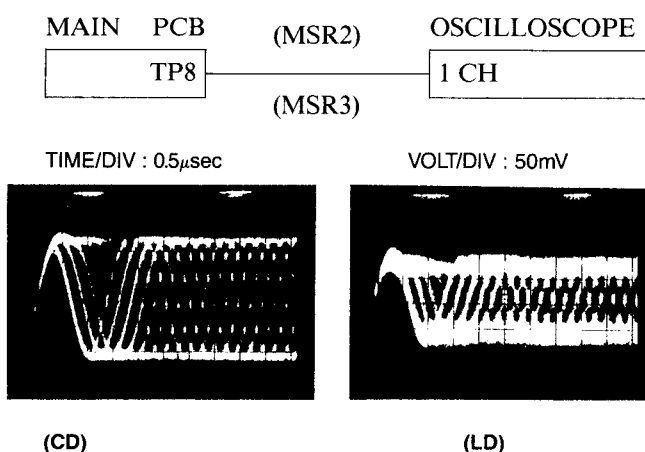
SETTING

MODE : CH 1
TIME/DIV : 2msec
VOLT/DIV : 50mV
PROBE SETTING 10 : 1



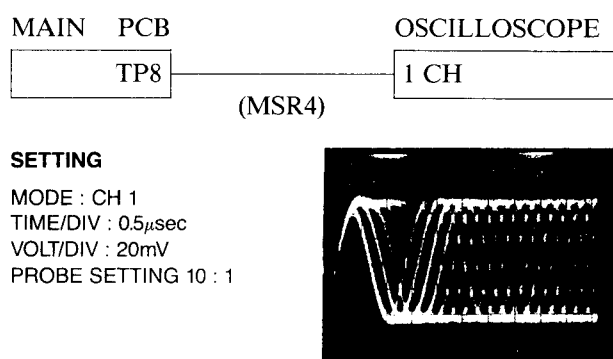
3. LD & CD FOCUS Balance Adjustment

- ① Put SS-DEMON disc in and press PLAY button.
- ② Set the unit on chapter 6.
- ③ Adjust MSR2 so that the waveform at TP8 is at the maximum. (LD FOCUS balance adjustment)
- ④ Put YEDS-43 disc in and press PLAY button.
- ⑤ Set the unit on chapter 11.
- ⑥ Adjust MSR3 so that the waveform at TP8 is at the maximum. (CD FOCUS balance adjustment) (TP8 : PIN 14 of WIC5)



4. RF GAIN Adjustment

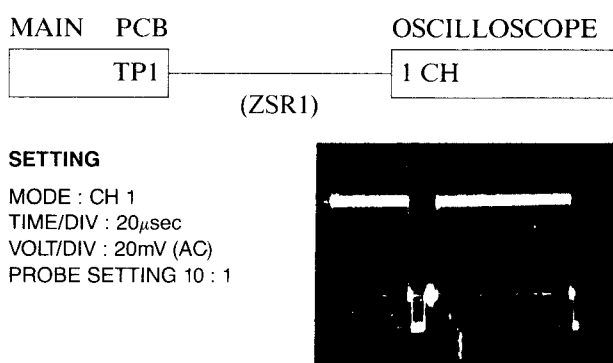
- ① Put YEDS-43 disc in and press PLAY button.
- ② Set the unit on chapter II.
- ③ Adjust MSR4 so that the oscilloscope waveform at TP8 is 1Vp-p. (TP8 : PIN 14 of WIC5)



III. VIDEO ADJUSTMENT

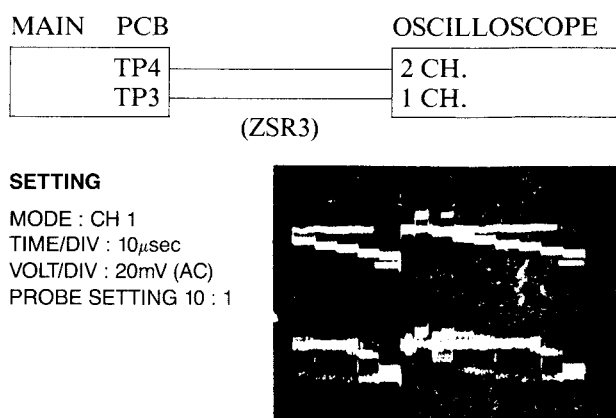
1. VIDEO LEVEL Adjustment

- ① Put P8-II disc in and set unit on chapter 4.
- ② Set the unit on STILL mode.
- ③ Adjust ZSR1 so that oscilloscope waveform at TP1 is 2Vp-p.



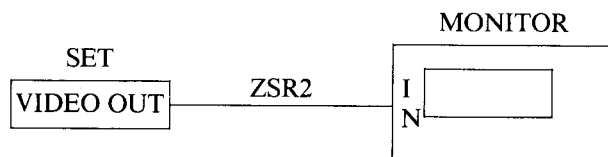
2. 1H (Horizontal) DELAY Adjustment

- ① Put P8-II disc in and set unit on chapter 8.
- ② Connect TP3 to Channel 1, and TP4 to Channel 2.
- ③ Set the unit on STILL mode.
- ④ Adjust ZSR3 so that waveform of TP4 equal to waveform of TP3.



3. DROP OUT Adjustment

- ① Play Chapter 7 (magenta) of P8-II disc and set the unit to the STILL mode.
- ② Turn ZSR2 clockwise to occur DROP-OUT and turn ZSR2 counter clockwise so that the DROP-OUT is not occurring then, turn it counter clockwise approximately 60 degree for securing purpose.

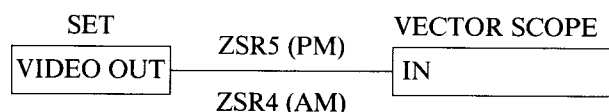


4. PM Adjustment

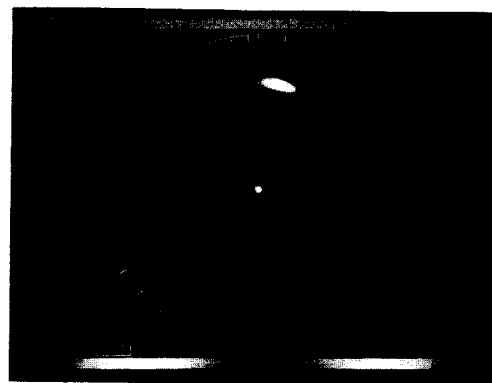
- ① Play P8-II disc and set unit on chapter 7.
- 2 Adjust ZSR5 so that the waveform of VECTOR SCOPE is clear.

5. AM Adjustment

- ① Play P8-II disc and set unit on chapter 7.
- ② Adjust ZSR4 so that the waveform of VECTOR SCOPE is clear enough.
(It can be adjustable by observing pictures on screen)



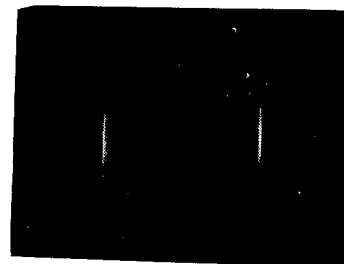
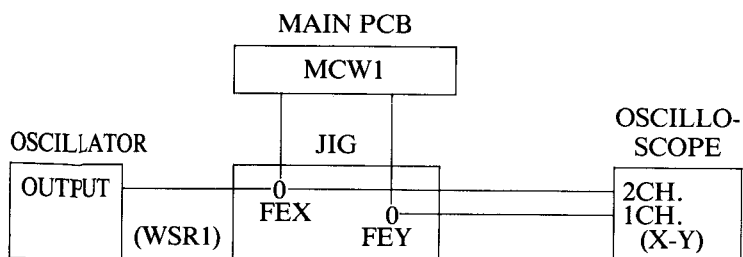
SETTING
MODE : VECT
REF : INT
VARI : ON



IV. SERVO GAIN ADJUSTMENT

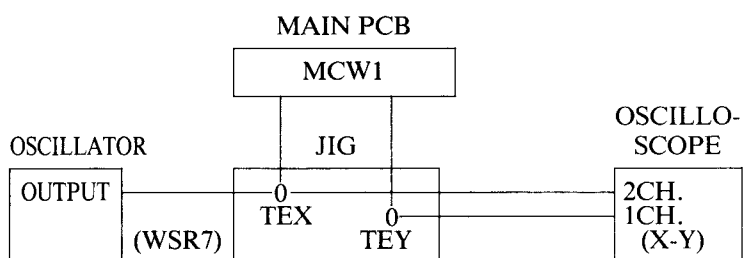
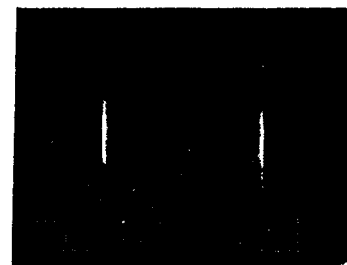
1. FOCUS GAIN Adjustment

- ① Connect JIG PCB to MAIN PCB.
- ② Put YEDS-43 disc in and set the unit on Chapter 11 and set the unit on PAUSE mode.
- ③ Adjust WSR1 in the MAIN PCB so that the waveform is as shown in picture.



2. TRACKING GAIN Adjustment

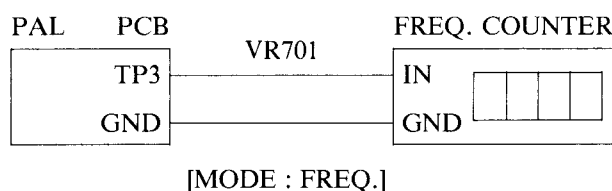
- ① Connect JIG PCB to MAIN PCB.
- ② Put YEDS-43 disc in and set the unit on Chapter 11 and set the unit on PAUSE mode.
- ③ Adjust WSR7 in the MAIN PCB so that the waveform is as shown in picture.



V. PAL ADJUSTMENT

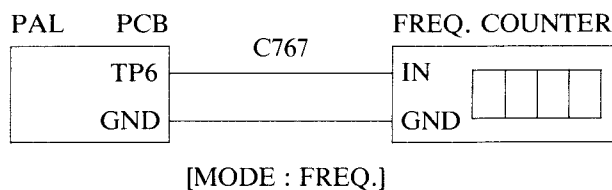
1. NTSC REF. Adjustment

- ① Turn Pown and set the unit STOP mode.
- ② Short GND and Pin 23 of IC708.
- ③ Adjust VR701 so that Freq. Counter reads $3.579545\text{MHz} \pm 10\text{Hz}$.
- ④ Open Pin 23 of IC708.



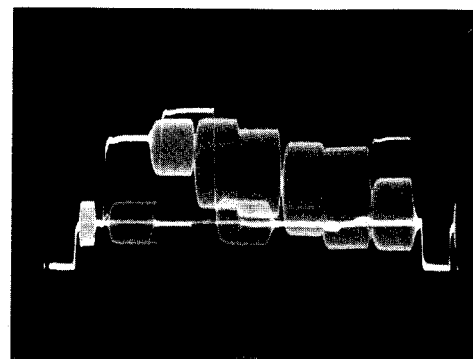
2. PAL REF. Adjustment

- ① Turn Pown on and set the unit STOP mode.
- ② Adjust C767 so that Freq. Counter reads $4.433619\text{MHz} \pm 20\text{Hz}$.



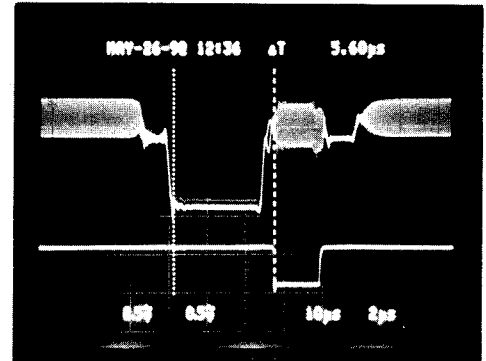
3. Y-LEVEL Adjustment

- ① Put P8-II disc in and set unit an Chapter 4, and set the unit on STILL mode.
- ② Adjust VR703 so that waveform of video-out is 1Vp-p.



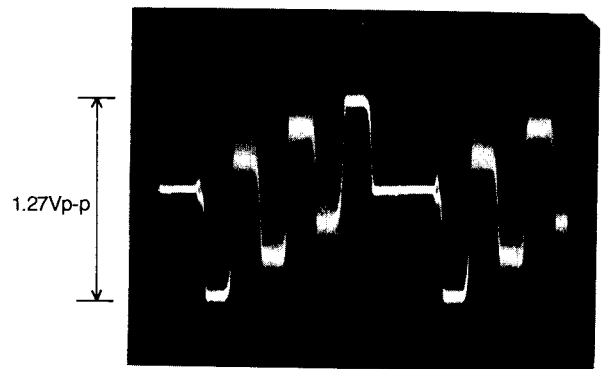
4. Burst FLAG Adjustment

- ① Put P8-II disc in and set unit on Chapter 4, and set the unit on STILL mode.
- ② CH1 — Video-out
CH2 — TP1 (IC708 Pin 3)
- ③ Adjust VR702 so that the falling edge of waveform of CH1 and CH2 is at $5.6\mu\text{F}$.



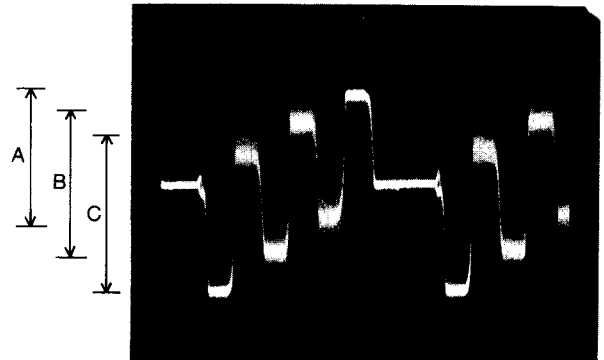
5. Color Adjustment

- ① Put P8-II disc and set unit on Chapter 8.
- ② Set the unit on STILL mode.
- ③ Adjust VR705 so that the waveform is as shown in the picture (1.27Vp-p)
- ④ Test point: TR4 (IC708 Pin 17)



6. HUE Adjustment

- ① Put P8-II disc in and set unit on Chapter 8.
- ② Set the unit on STILL mode.
- ③ Adjust VR704 so that A, B and C are all equal.
- ④ Test Point : TP4 (IC708 Pin 17).



7. TROUBLE SHOOTING

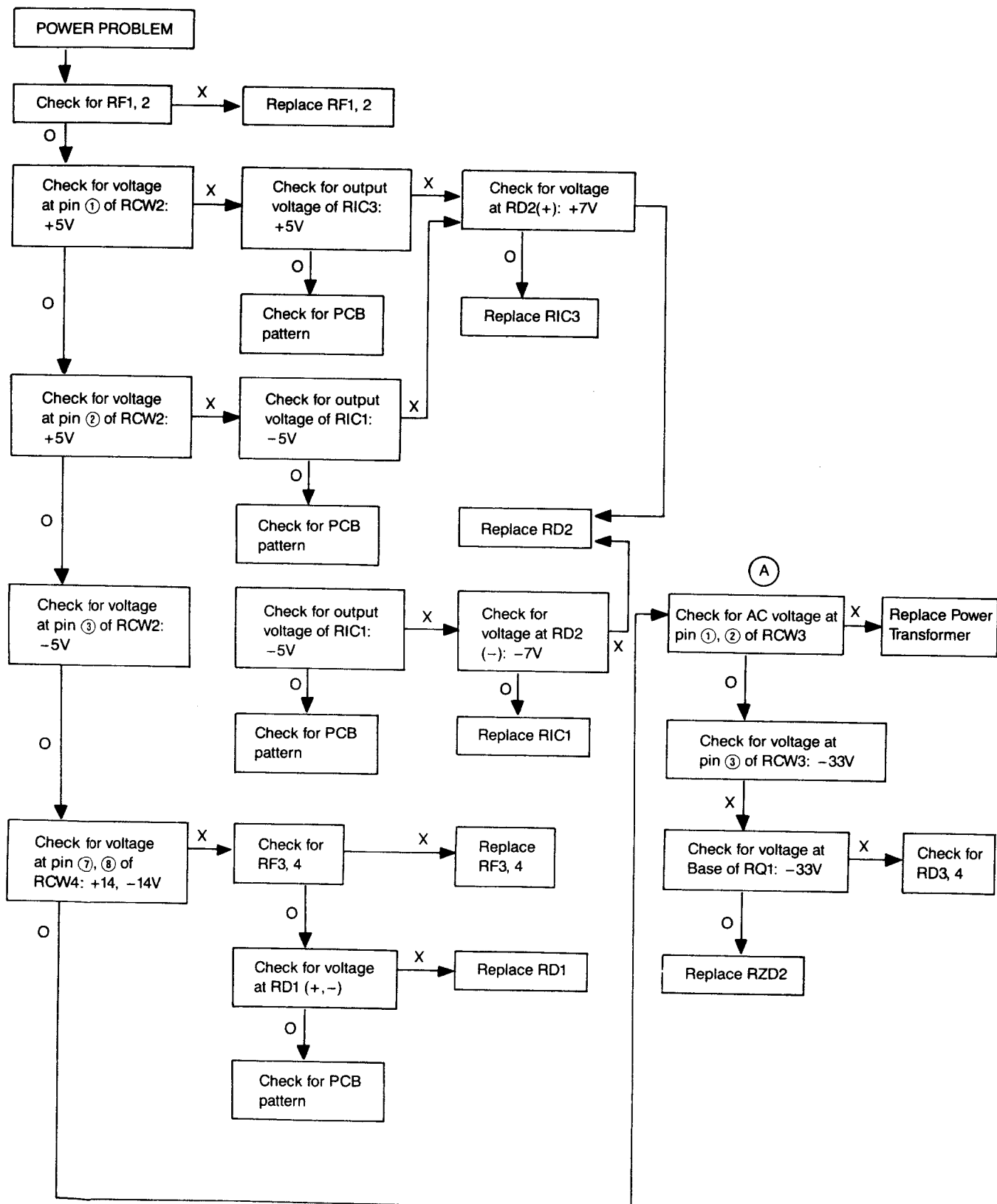
TROUBLE SHOOTING GUIDE BY SYMPTOM

NO.	SYMPTOM	PAGE
1	POWER SOURCE PROBLEM	
2	REMOTE CONTROL UNIT INOPERATIVE	
3	FLT DISPLAY PROBLEM	
4	NO FM OUTPUT	
5	DISC DOES NOT PLAYING	
6	CROSS TALK	
7	TRACKING IS NOT WORKING NORMALLY	
8	PICTURE PROBLEM	
9	UNIT FUNCTION INOPERATIVE	
10	NO VIDEO SIGNAL	
11	NO ANALOG SOUND	
12	NO DIGITAL SOUND	
13	NO RF OUT	
14	SPINDLE MOTOR INOPERATIVE	
15	NO 4D SUM OUTPUT	
16	CD DOES NOT PLAY	
17	FOCUS DOES NOT WORK	
18	SPINDLE MOTOR PROBLEM (C-SYNC.)	
19	NO C-SYNC.	
20	BLUE BACKGROUND NOT SHOWN	
21	SLIDER PROBLEM	
22	NO FG OUTPUT	
23	FOCUS ERROR CHECK	
24	NO LASER EMISSION	
25	CV DOES NOT PLAY	
26	TRACKING PROBLEM	
27	CHECK TRACKING ERROR	
28	TRAY DOES NOT CLOSE	
29	TRAY DOES NOT OPEN	
30	MIC ECHO DOES NOT WORK	
31	NO OUTPUT ON PAL-MODE	

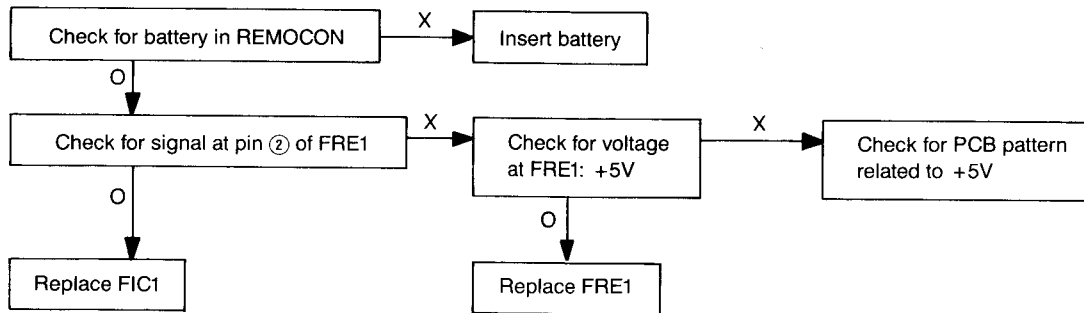
TROUBLE SHOOTING

1. POWER SOURCE PROBLEM

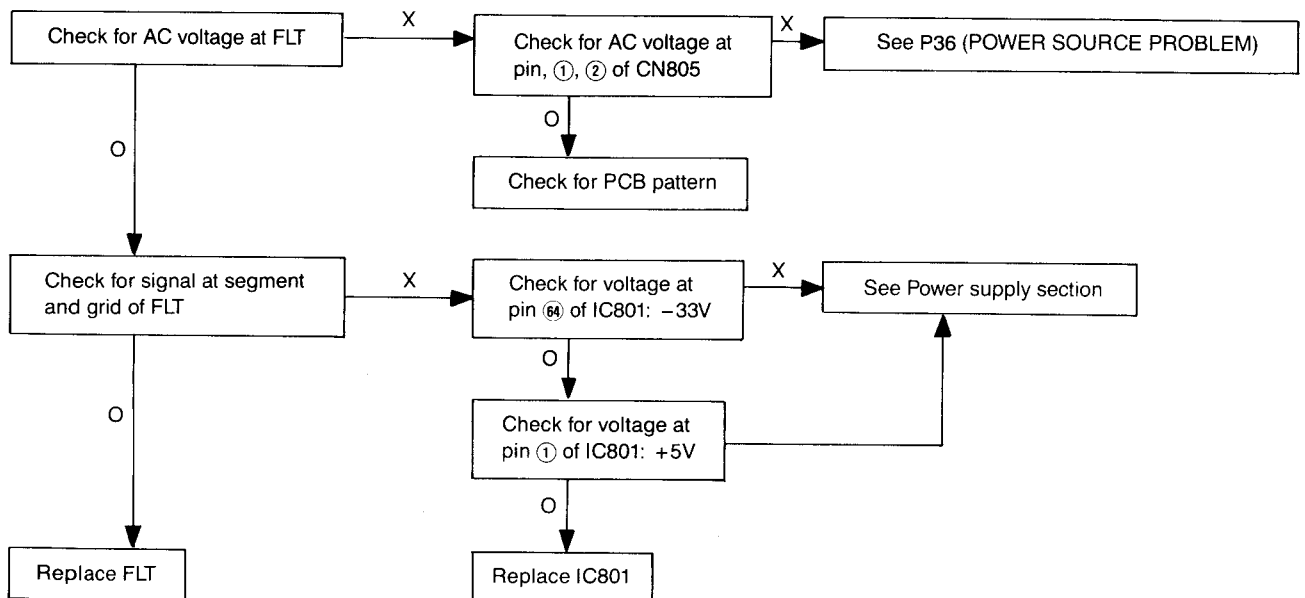
O: OK/NORMAL. YES
X: ABNORMAL. NO



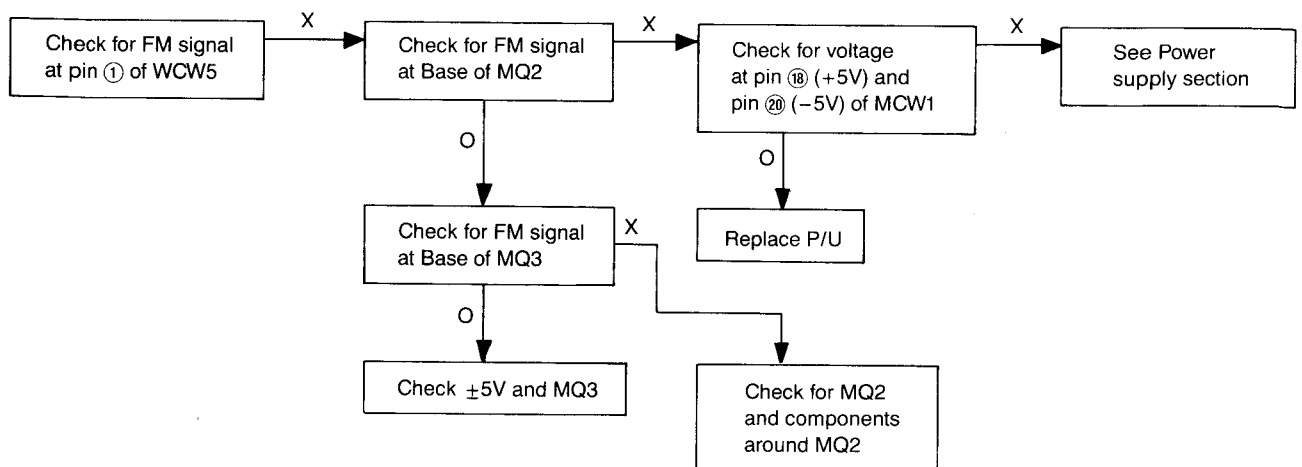
2. REMOTE CONTROL UNIT INOPERATIVE



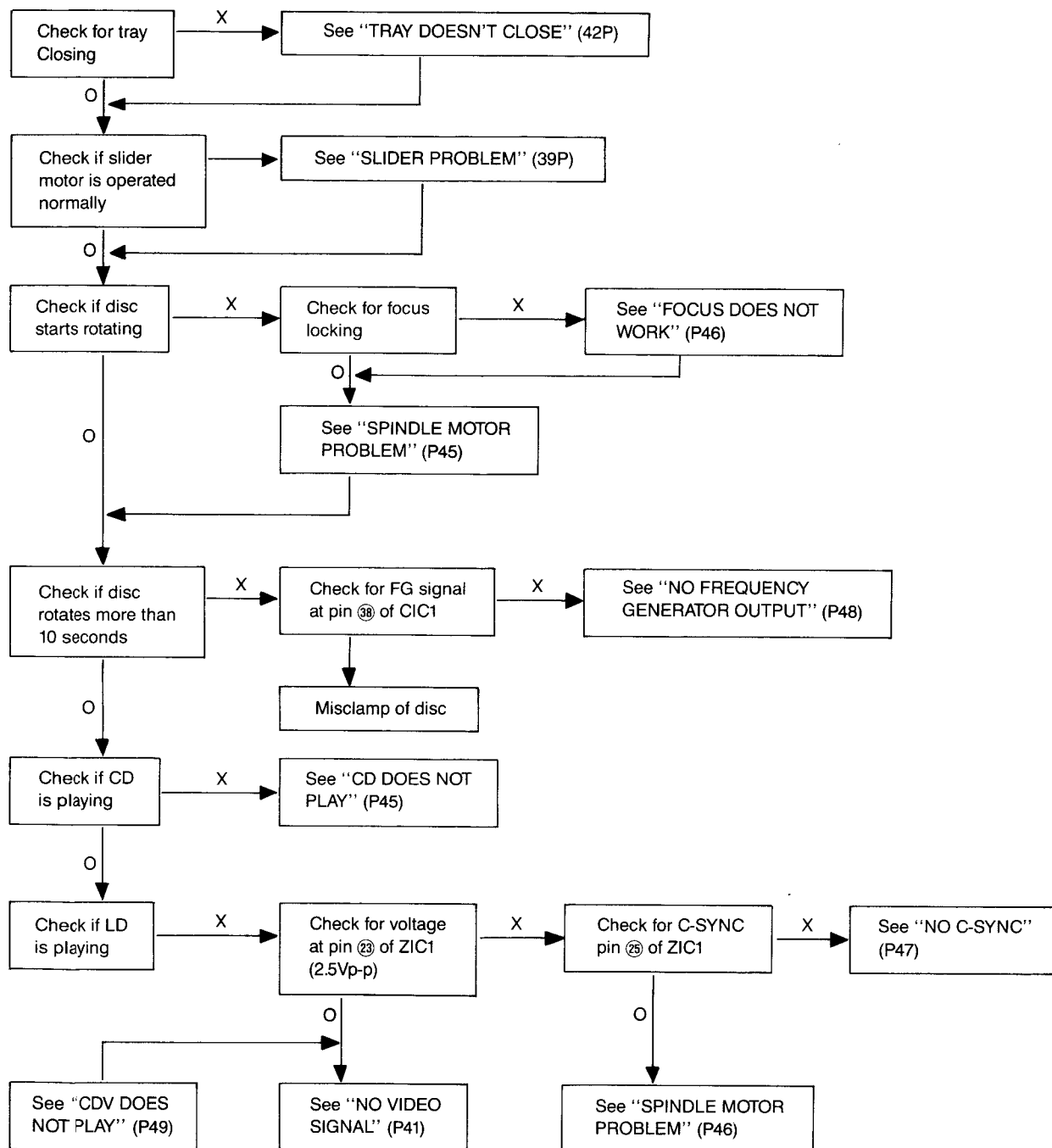
3. FLT DISPLAY PROBLEM



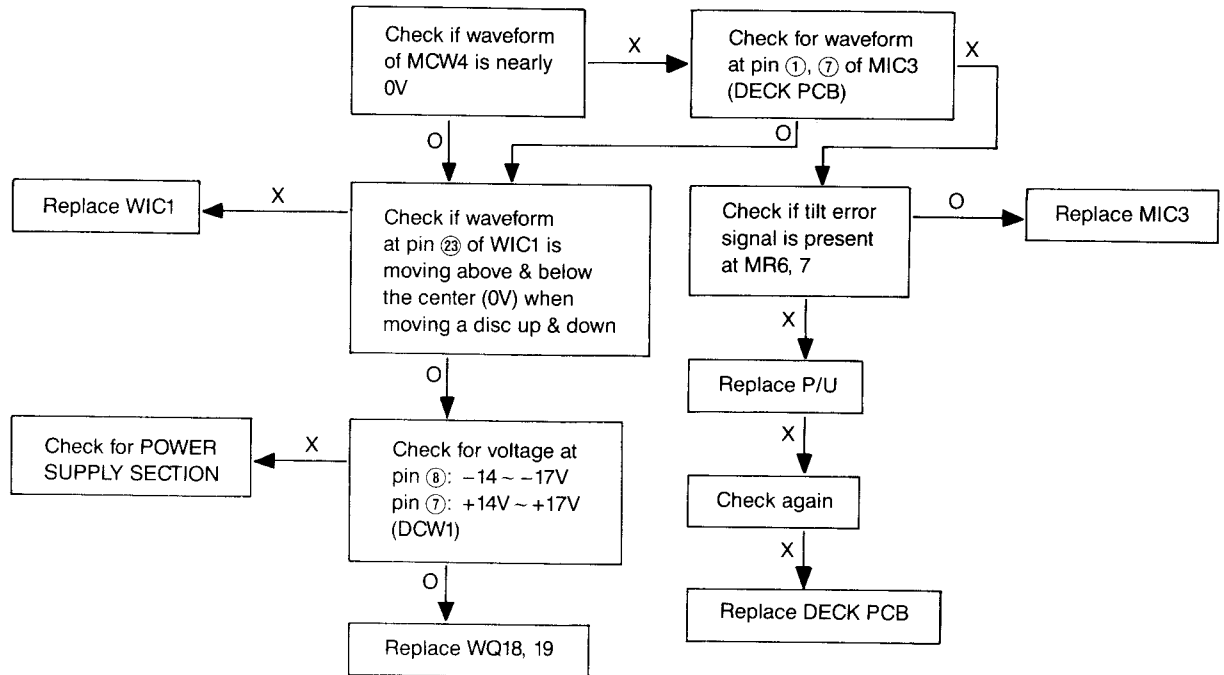
4. NO FM OUTPUT



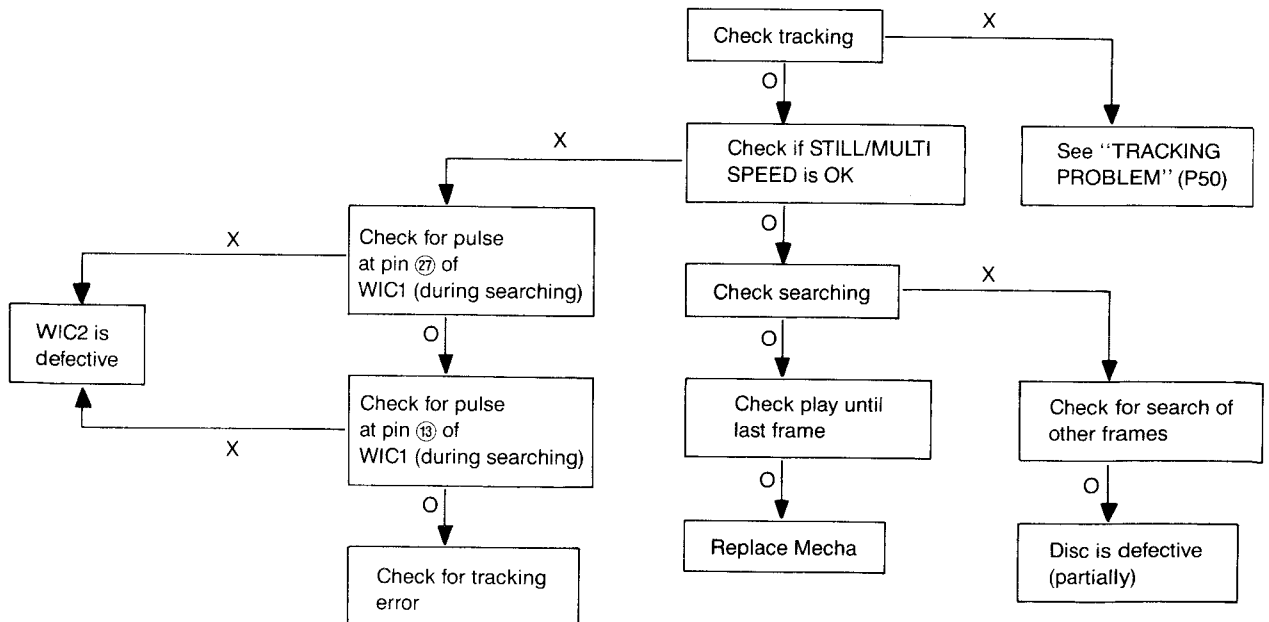
5. DISC NOT PLAYING



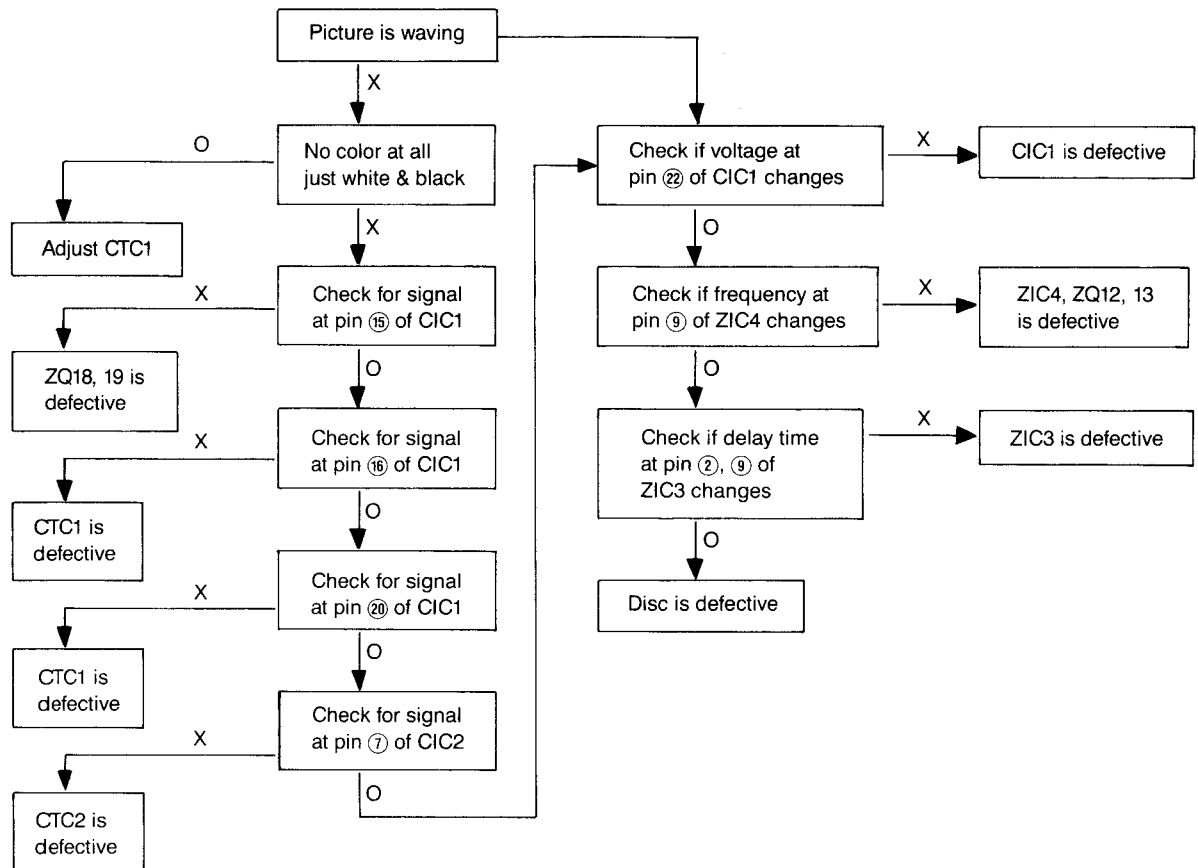
6. CROSSTALK



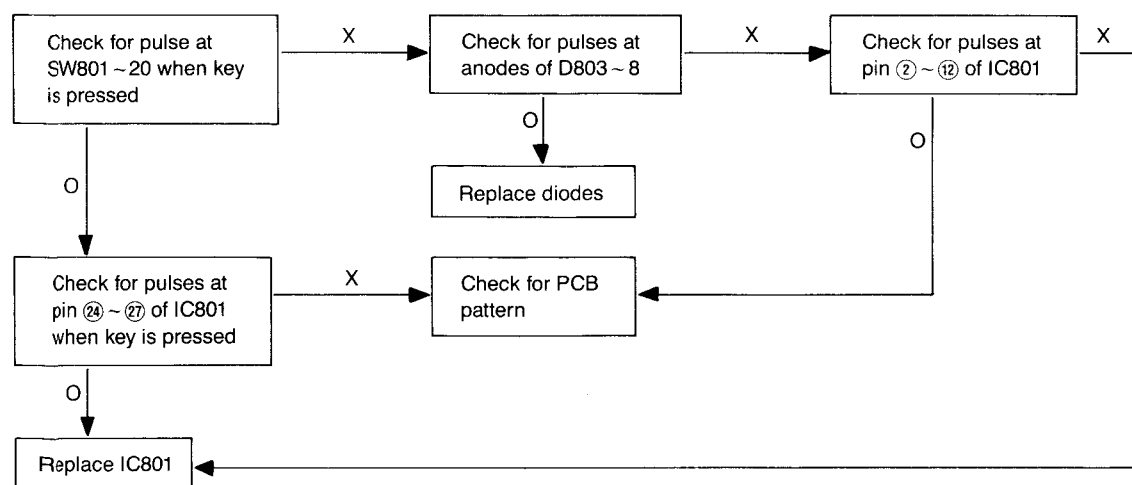
7. TRACKING IS NOT WORKING NORMALLY



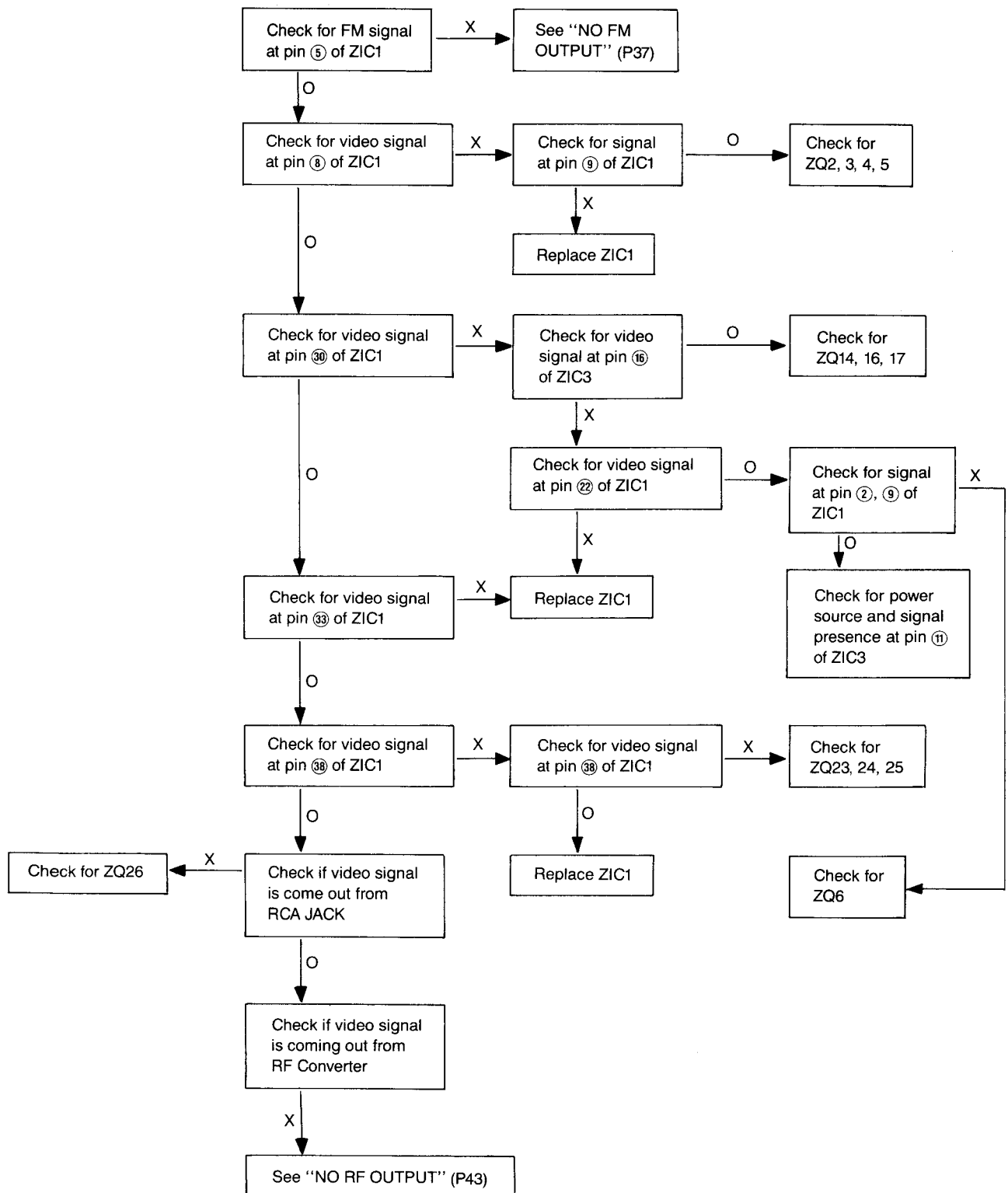
8. PICTURE PROBLEM



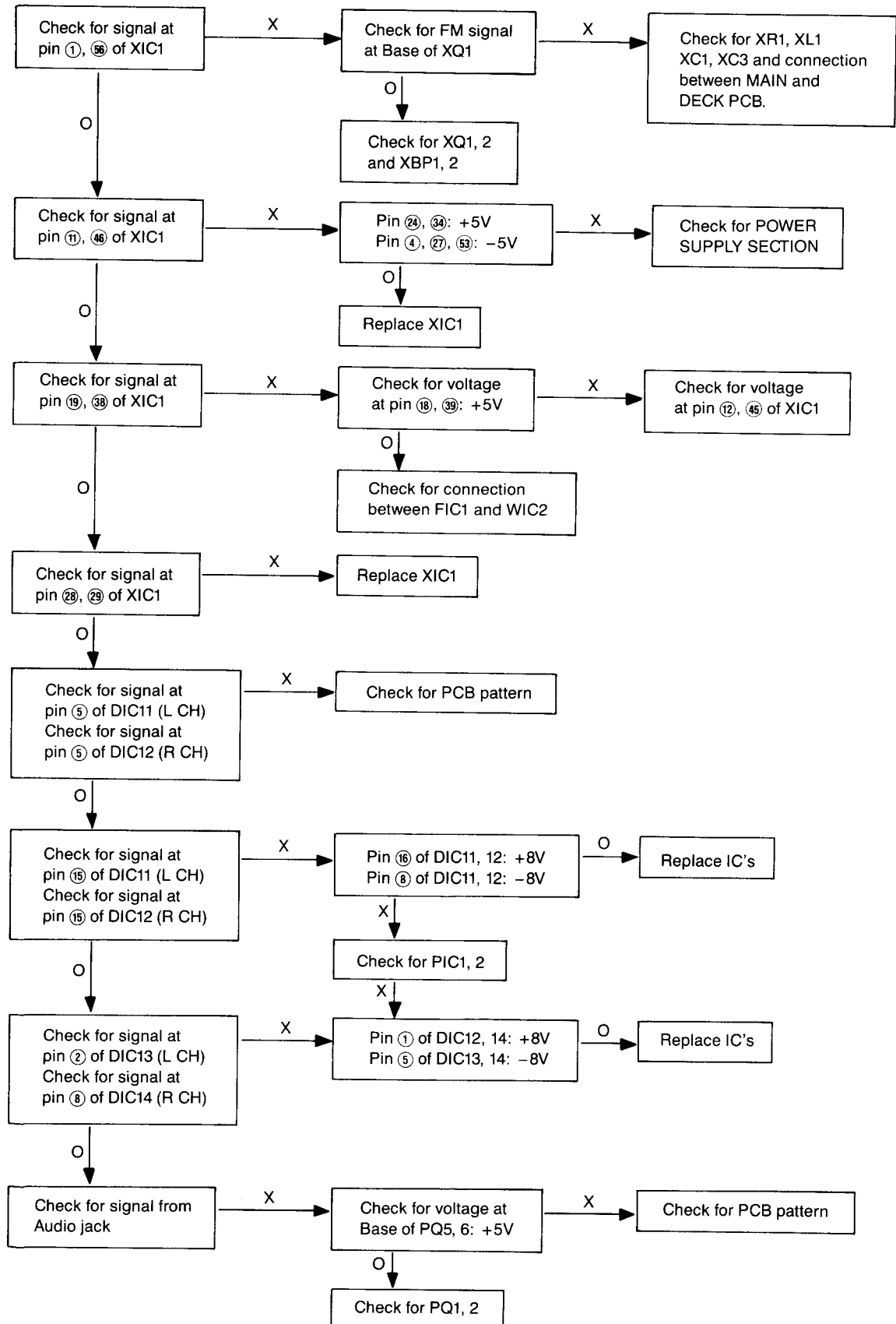
9. UNIT FUNCTION INOPERATIVE



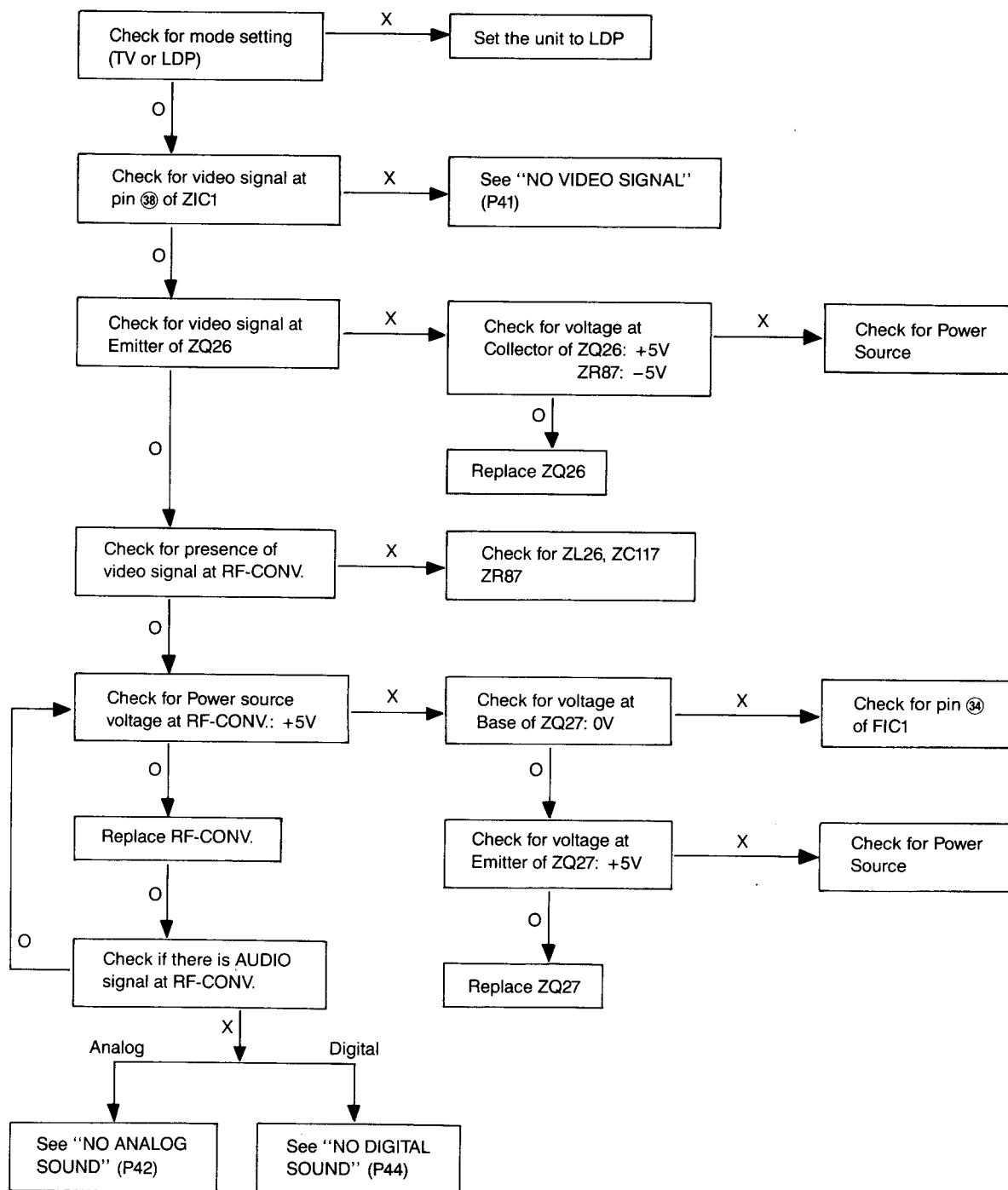
10. NO VIDEO SIGNAL



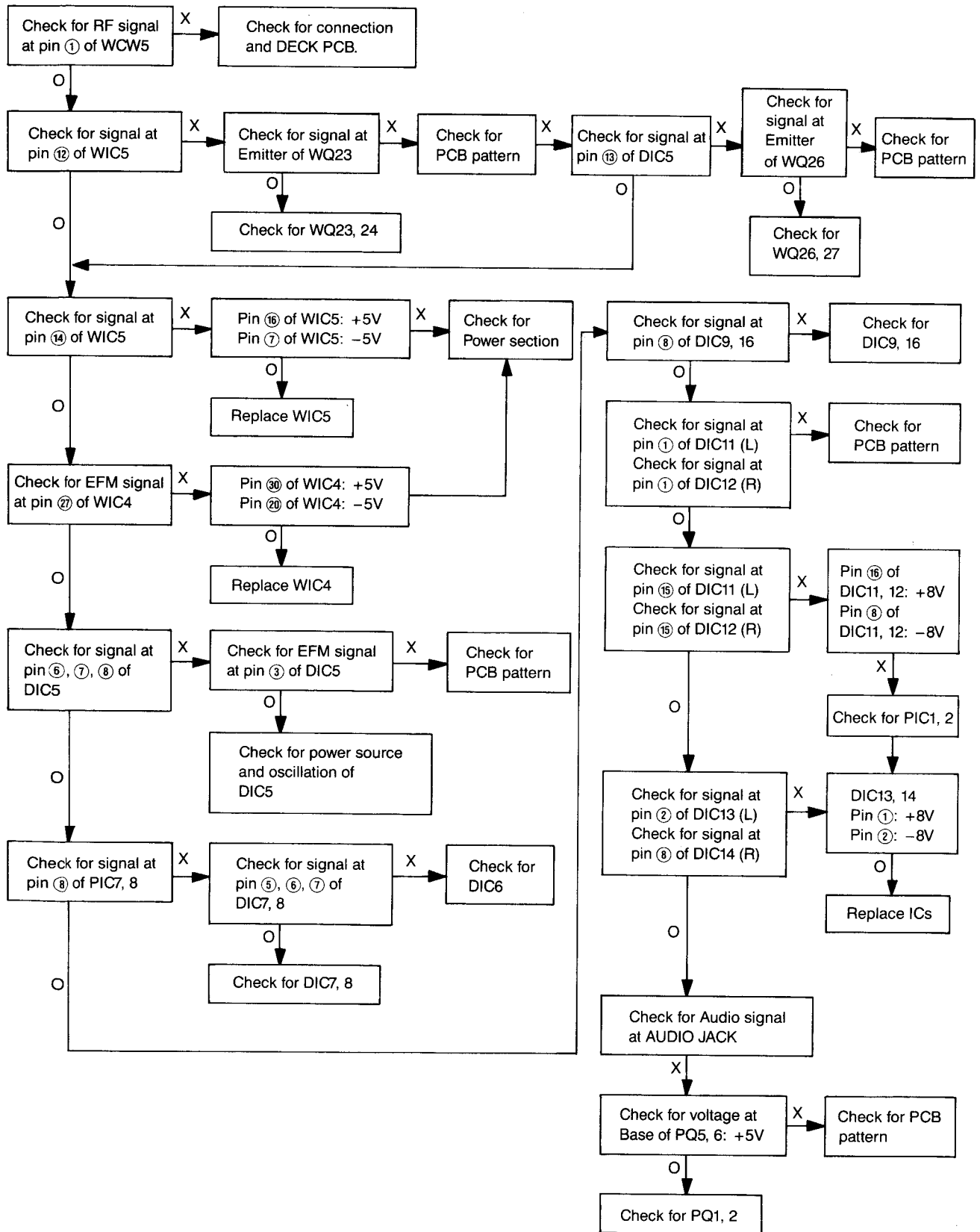
11. NO ANALOG SOUND



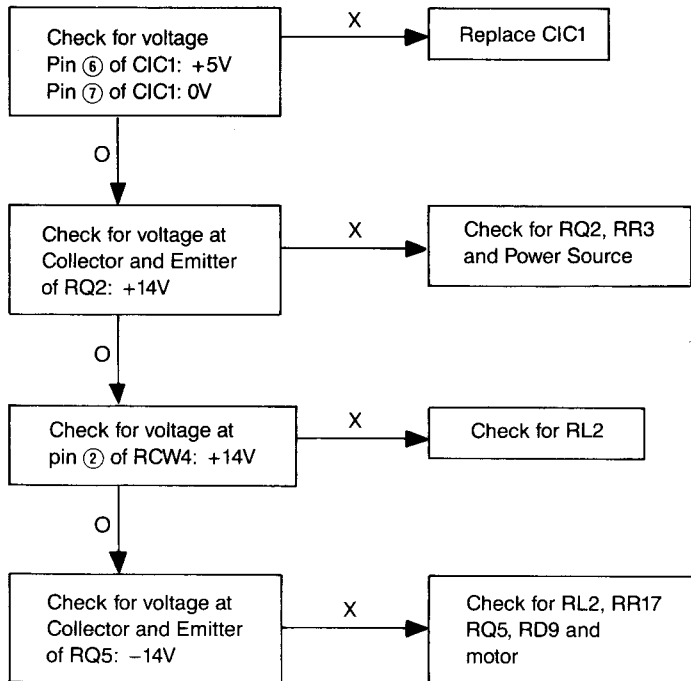
13. NO RF OUTPUT



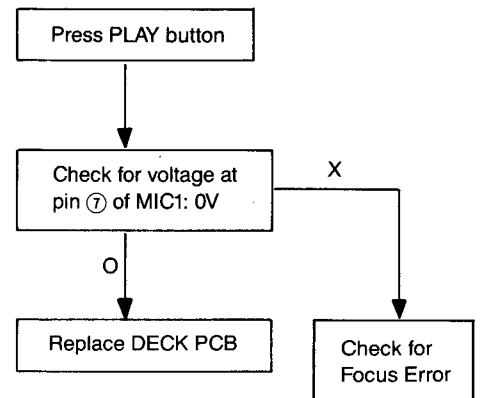
12. NO DIGITAL SOUND



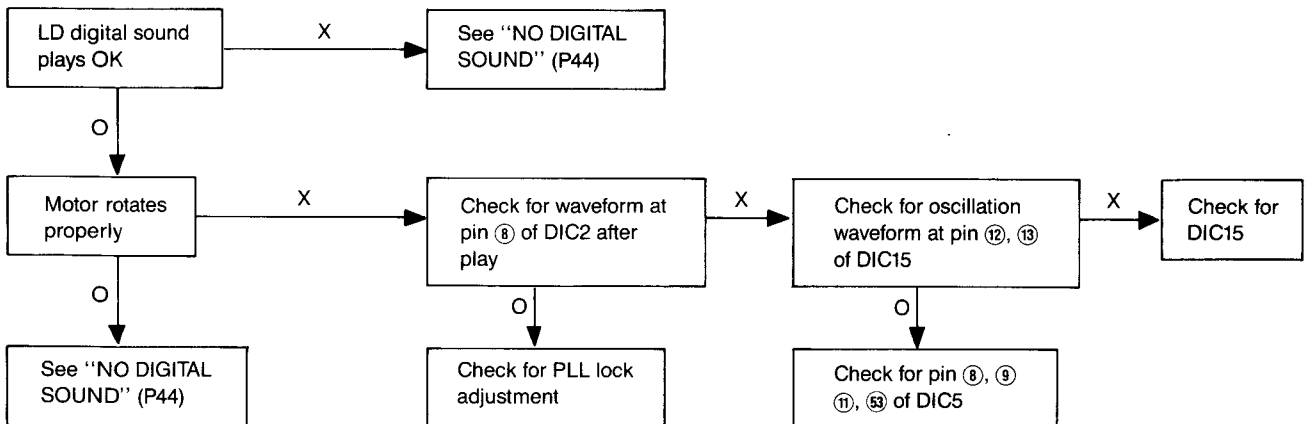
14. SPINDLE MOTOR INOPERATIVE



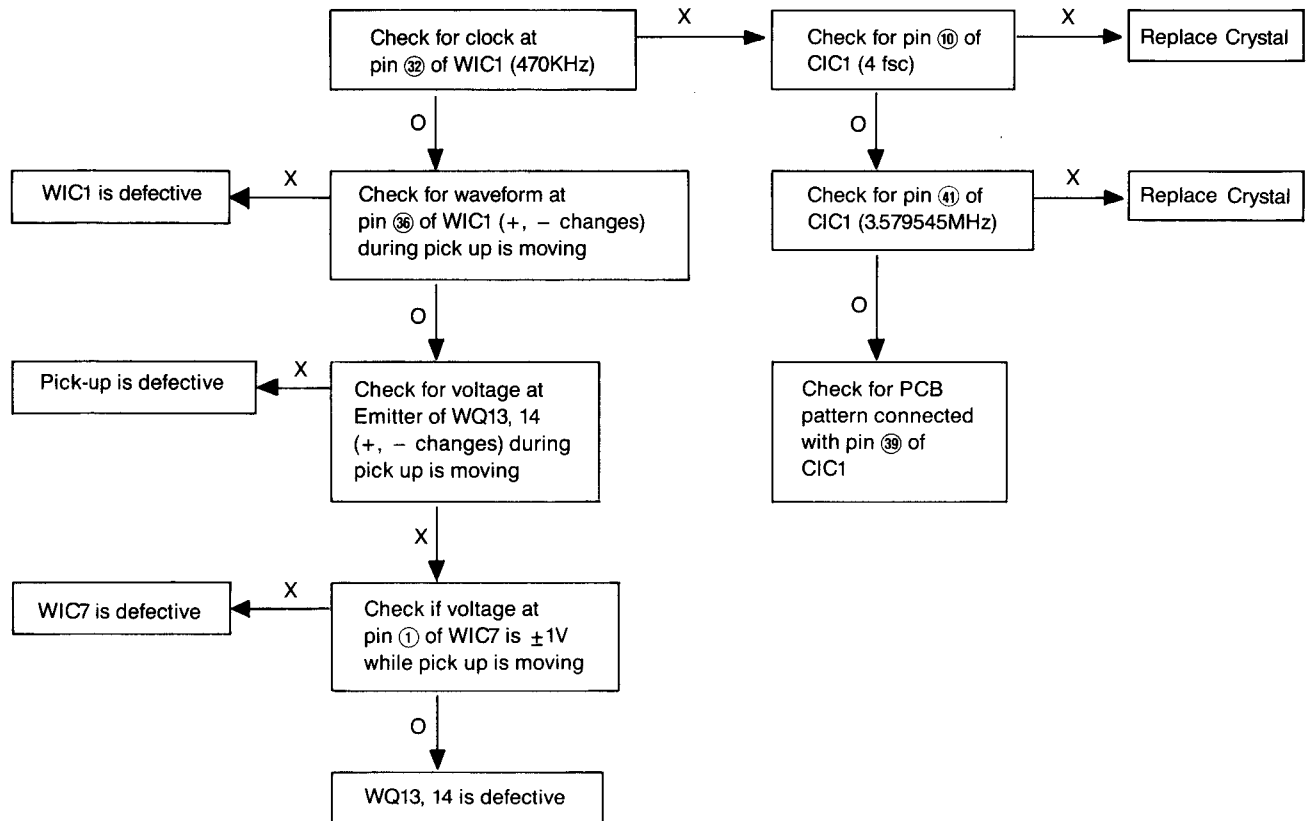
15. NO 4D SUM OUTPUT



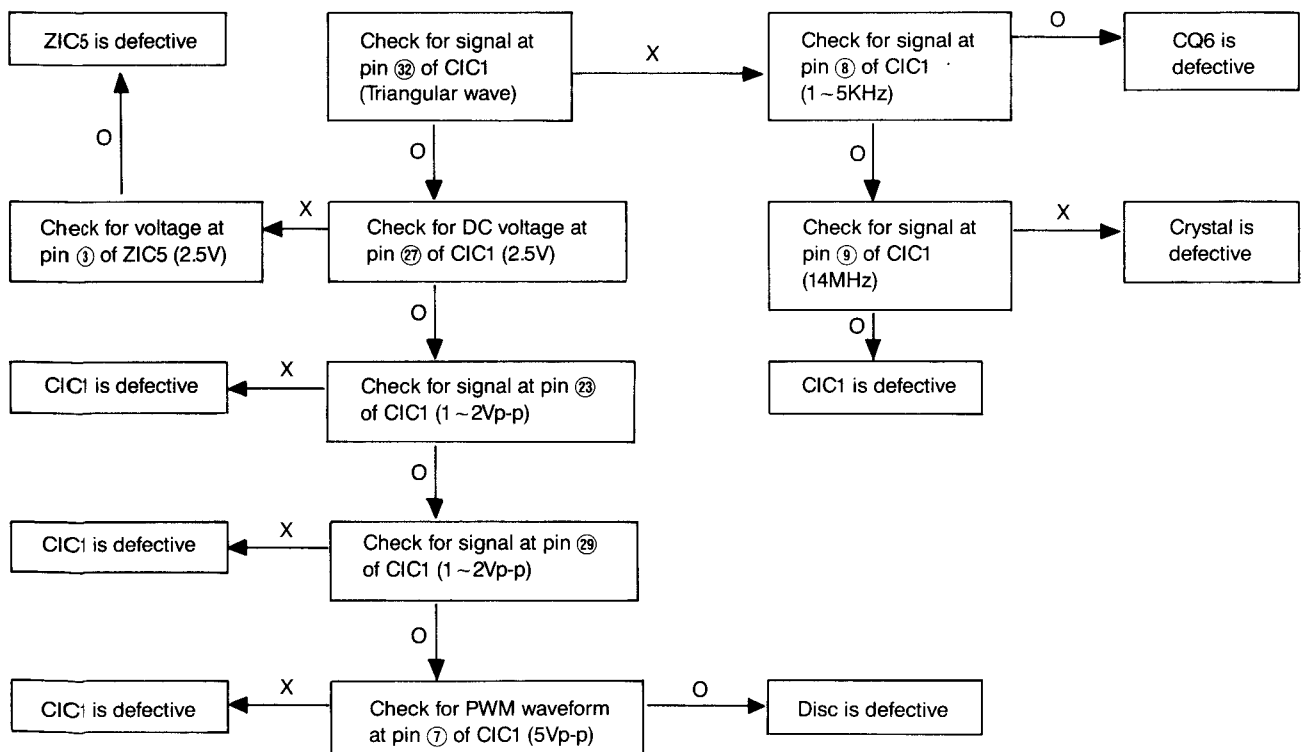
16. CD DOESN'T PLAY



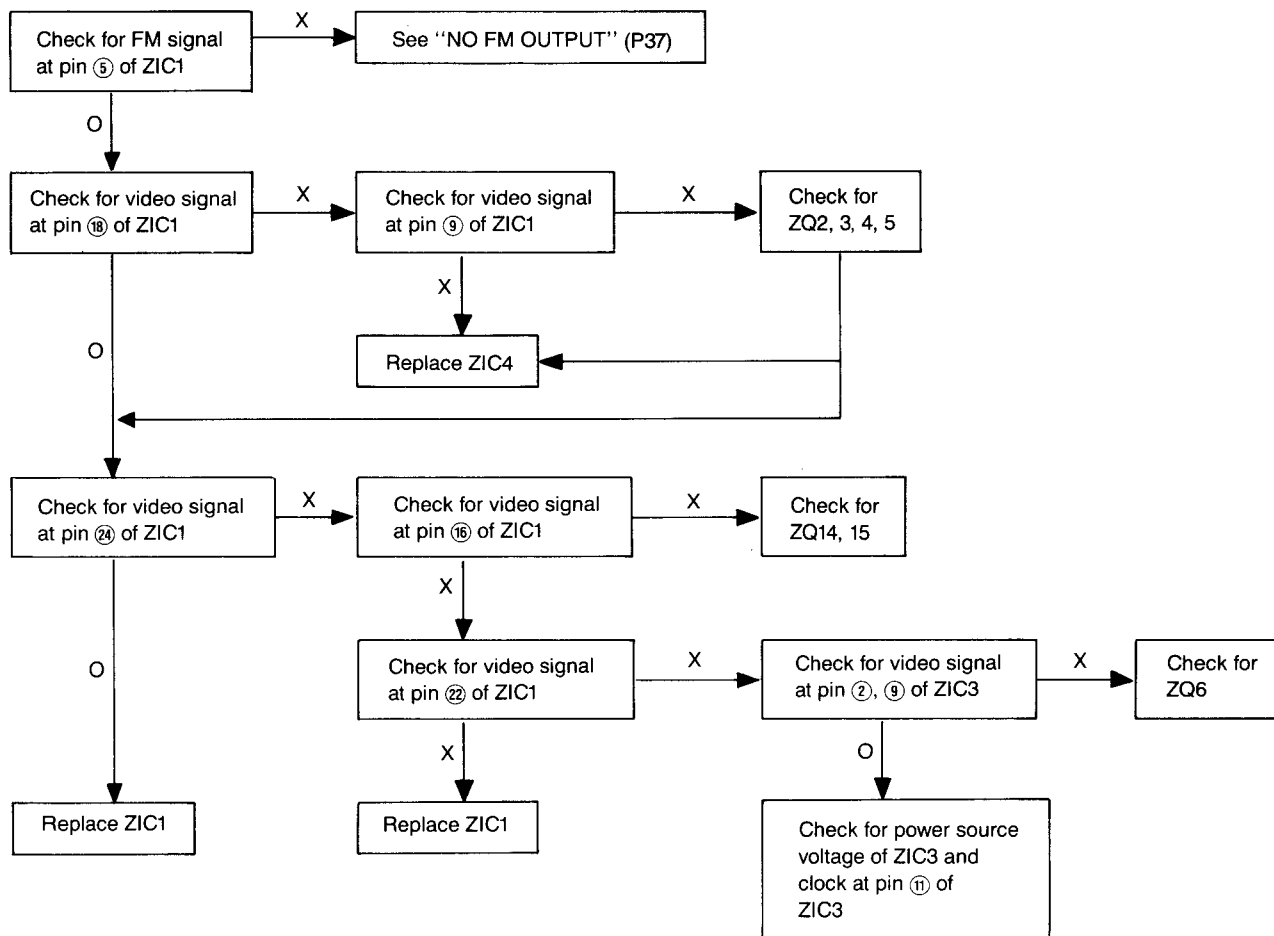
17. FOCUS DOESN'T WORK



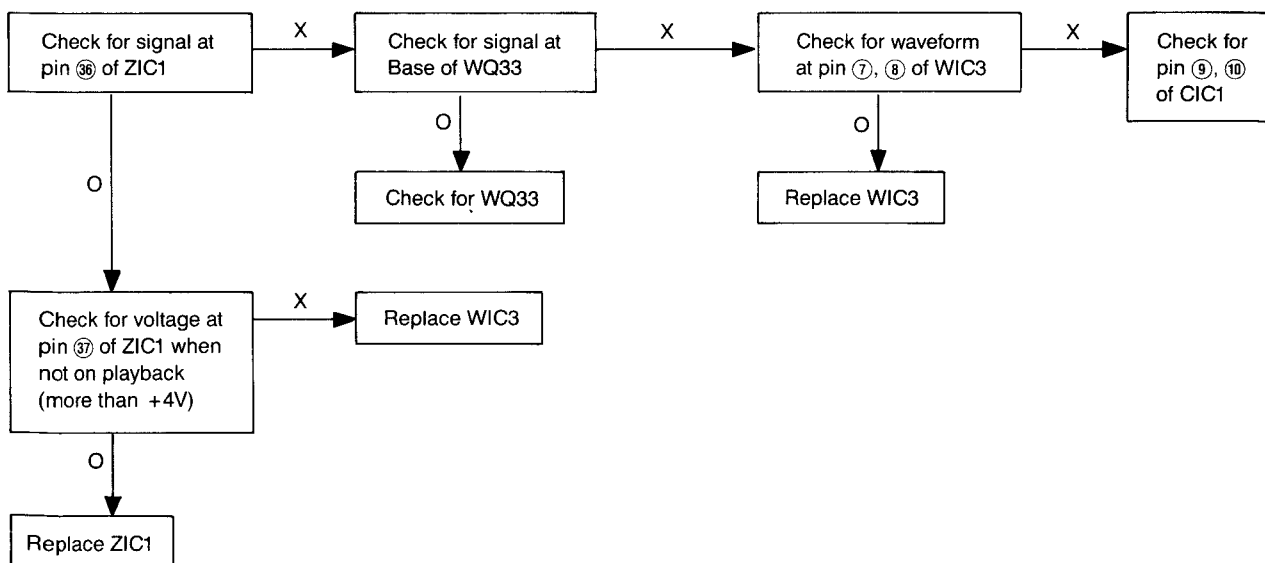
18. SPINDLE MOTOR PROBLEM (COMPOSITE SYNCHRONIZATION)



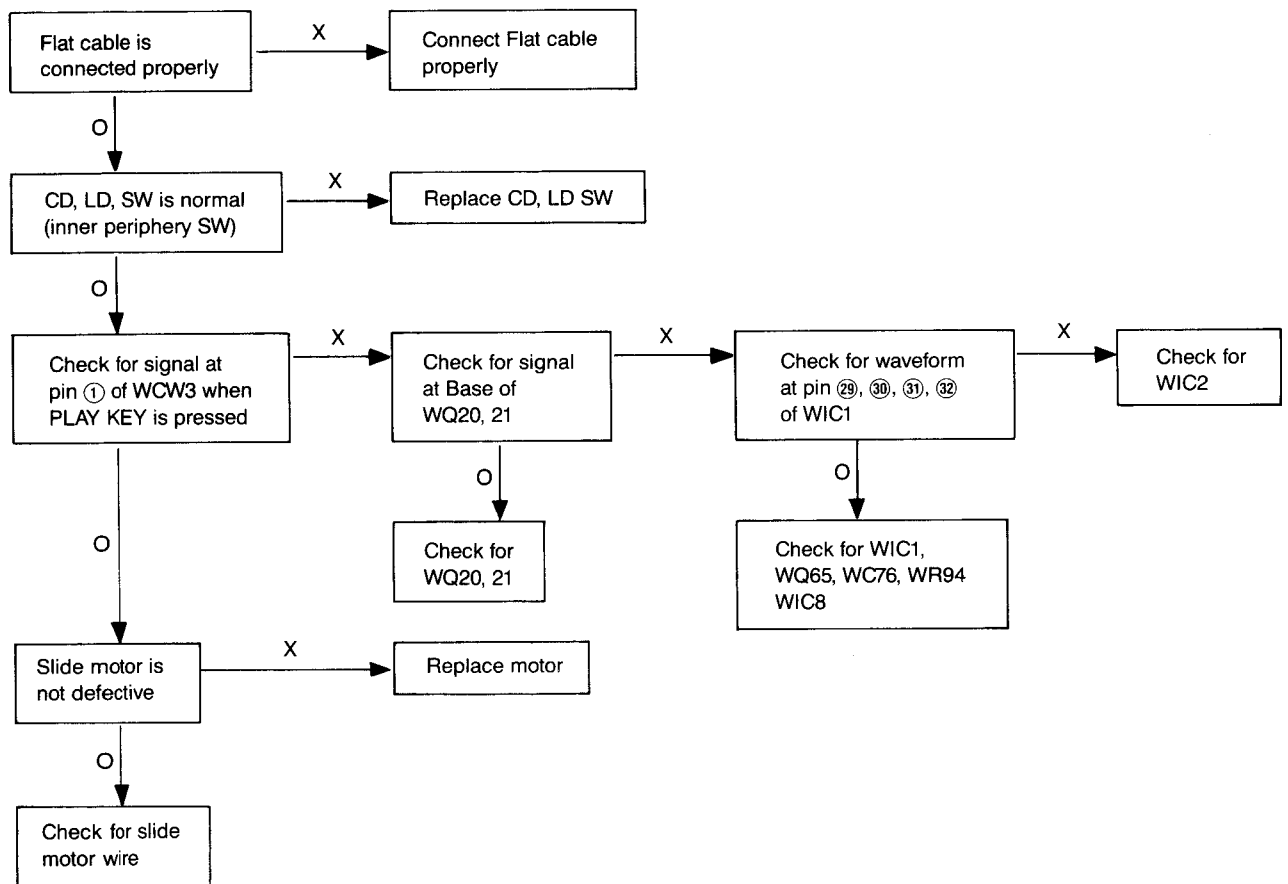
19. NO C-SYNC



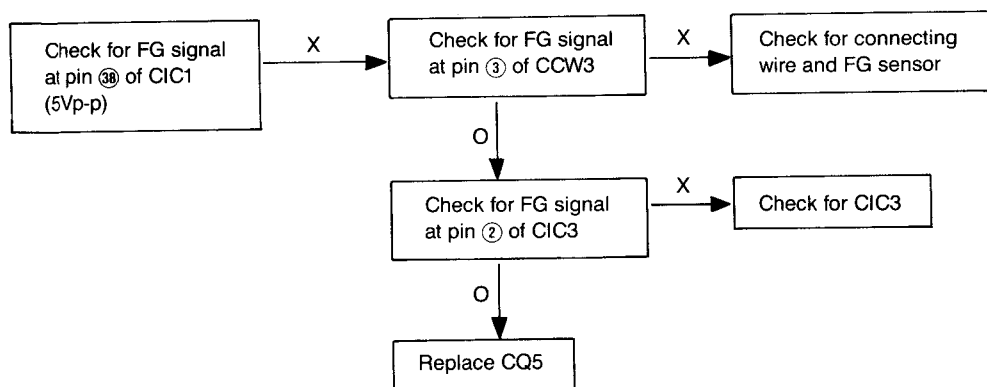
20. BLUE BACKGROUND NOT SHOWN



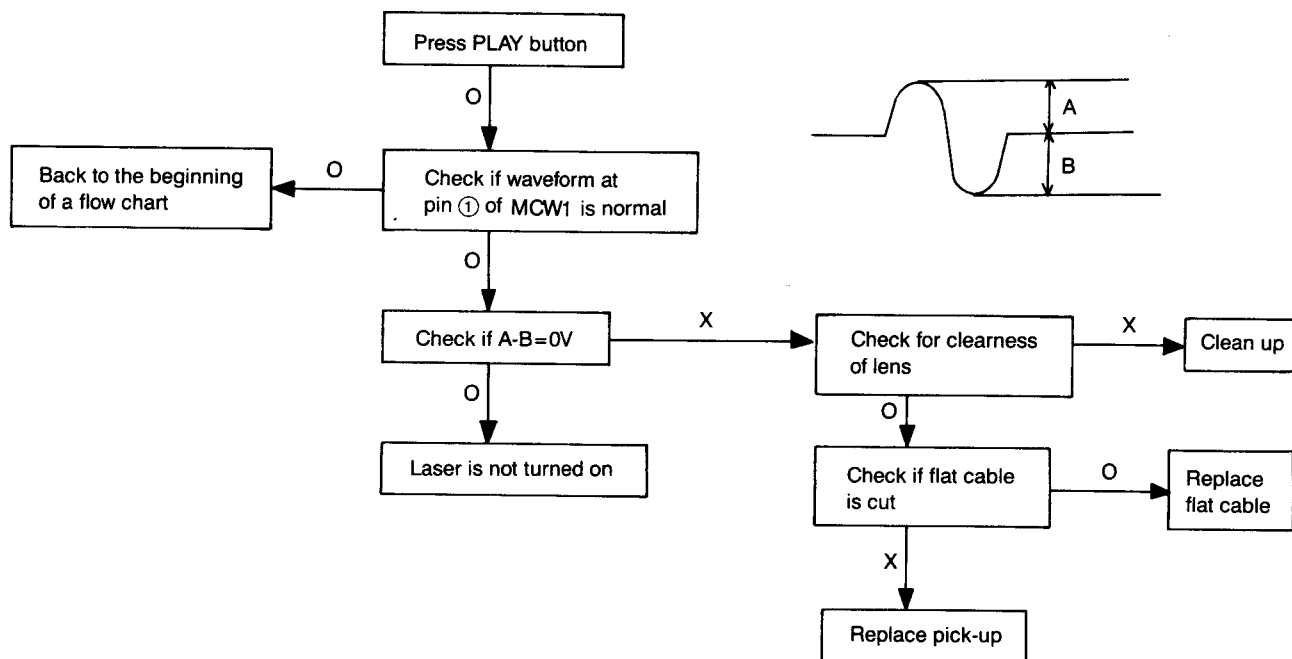
21. SLIDE MOTOR PROBLEM



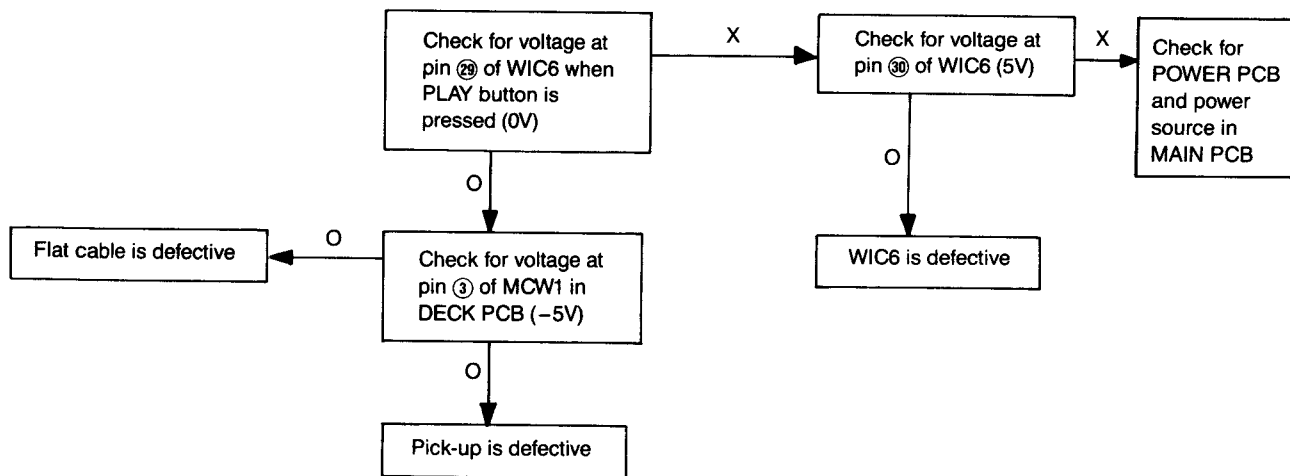
22. NO FG OUTPUT



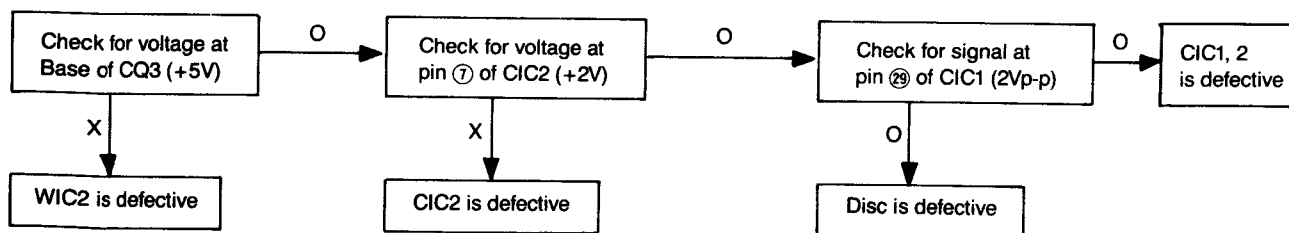
23. FOCUS ERROR CHECK



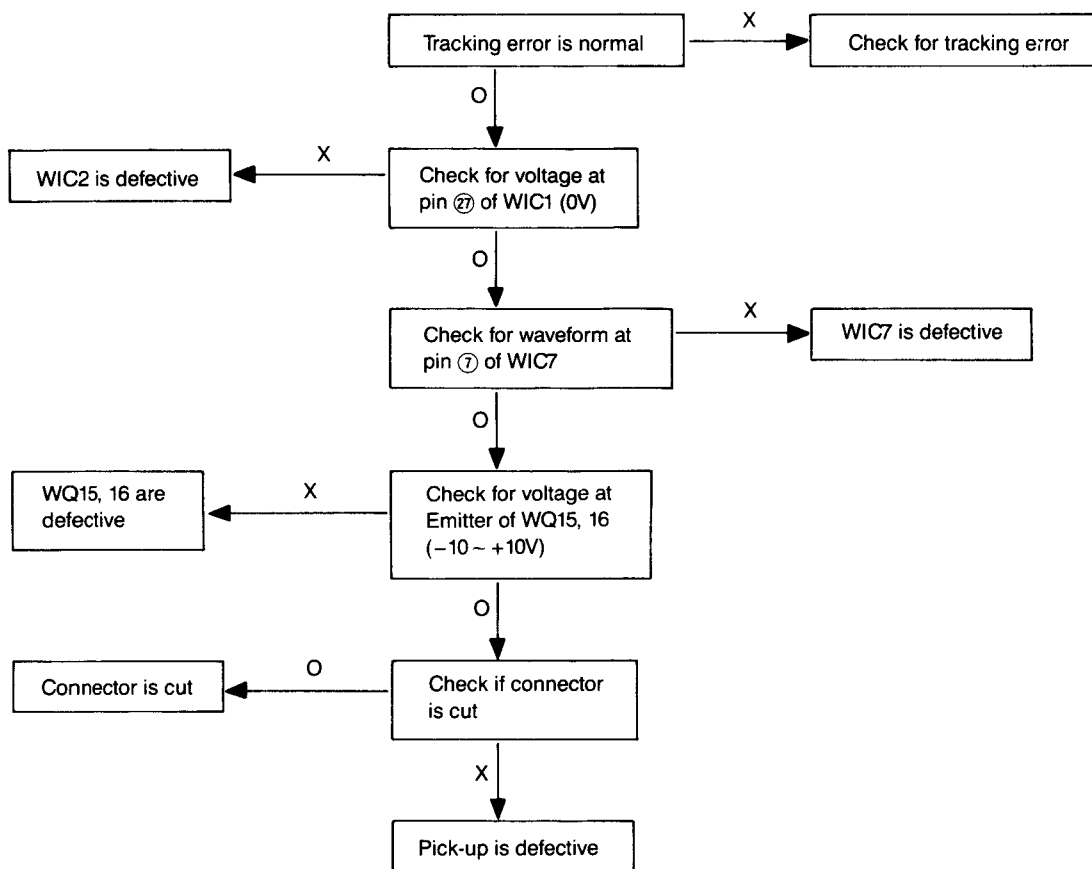
24. NO LASER EMISSION



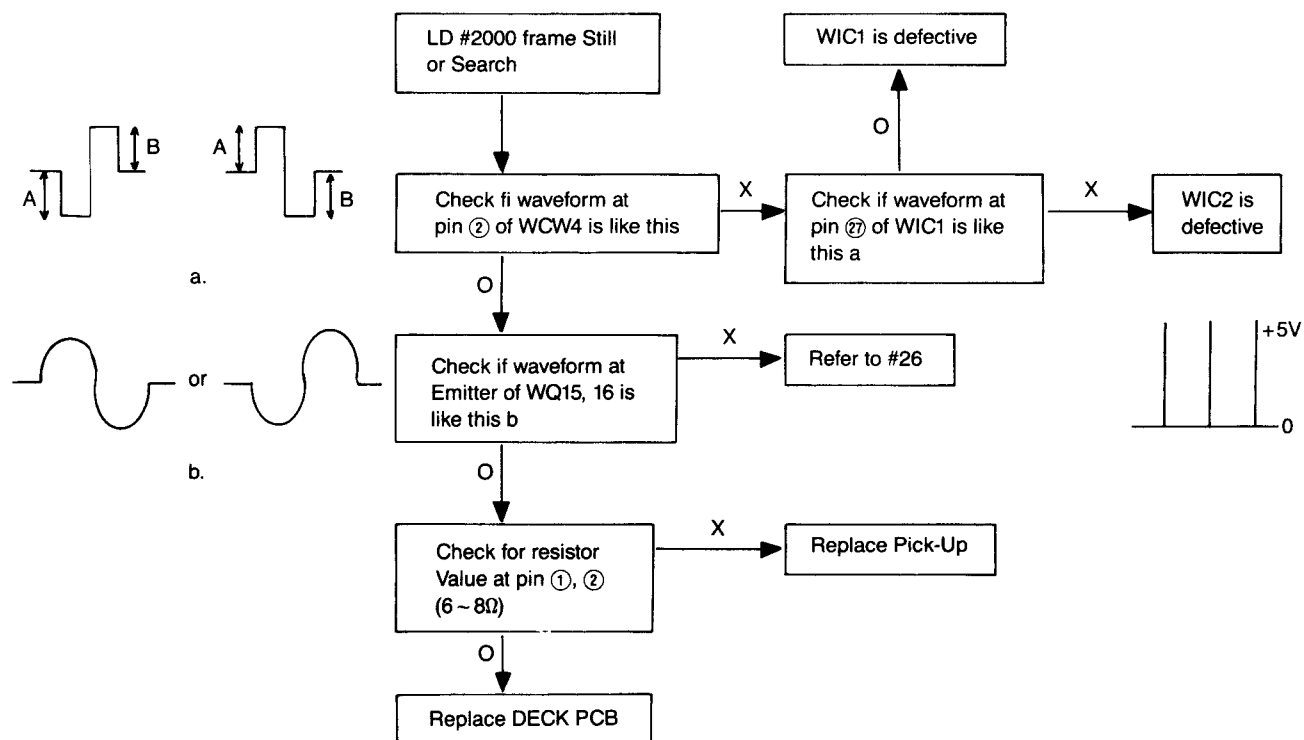
25. CDV DOESN'T PLAY



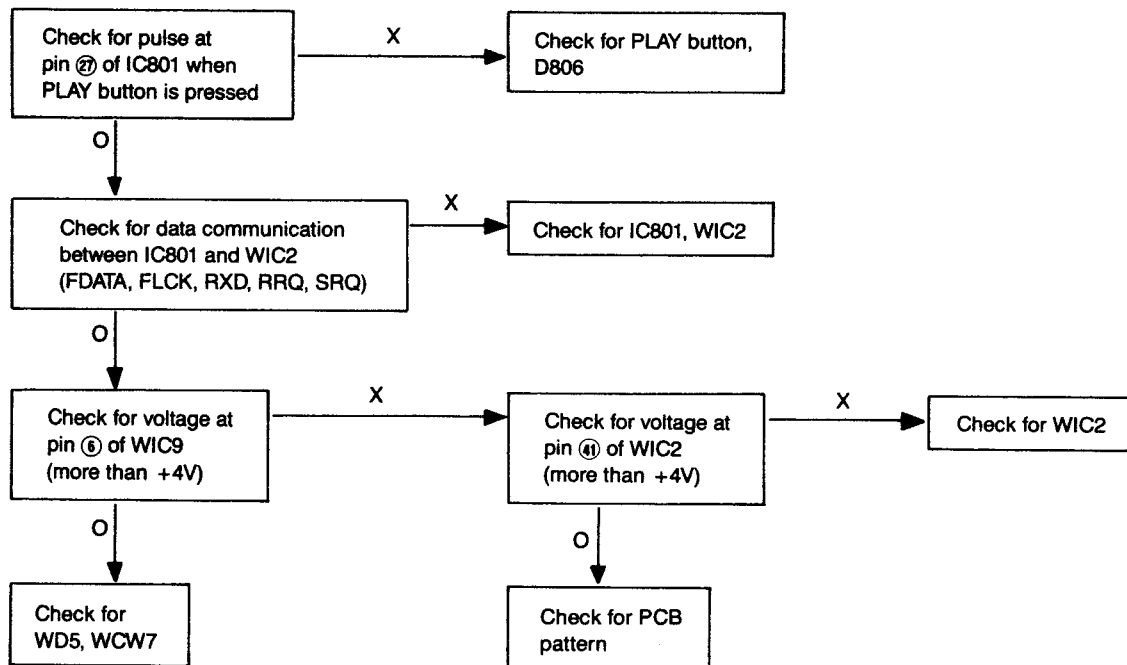
26. TRACKING PROBLEM



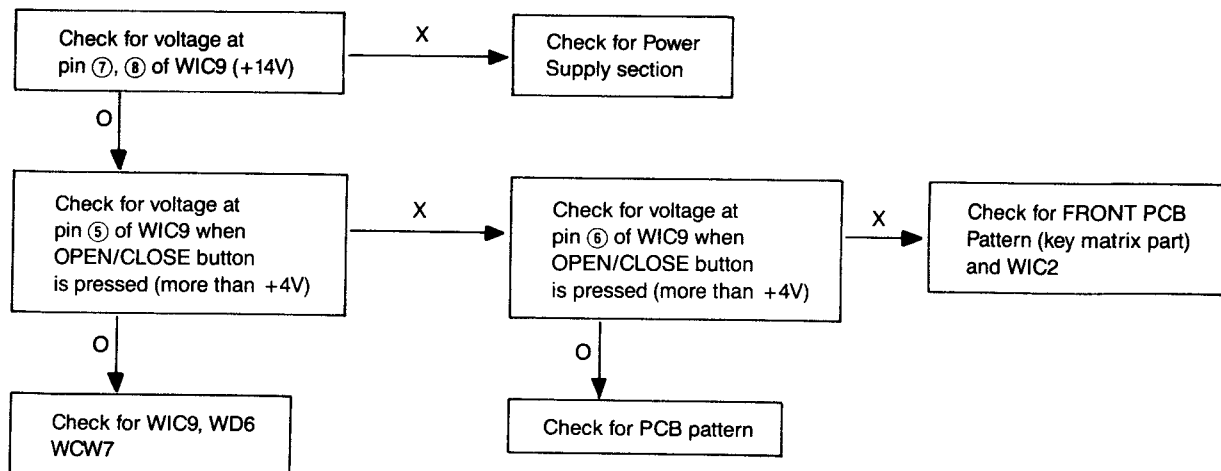
27. CHECK TRACKING ERROR



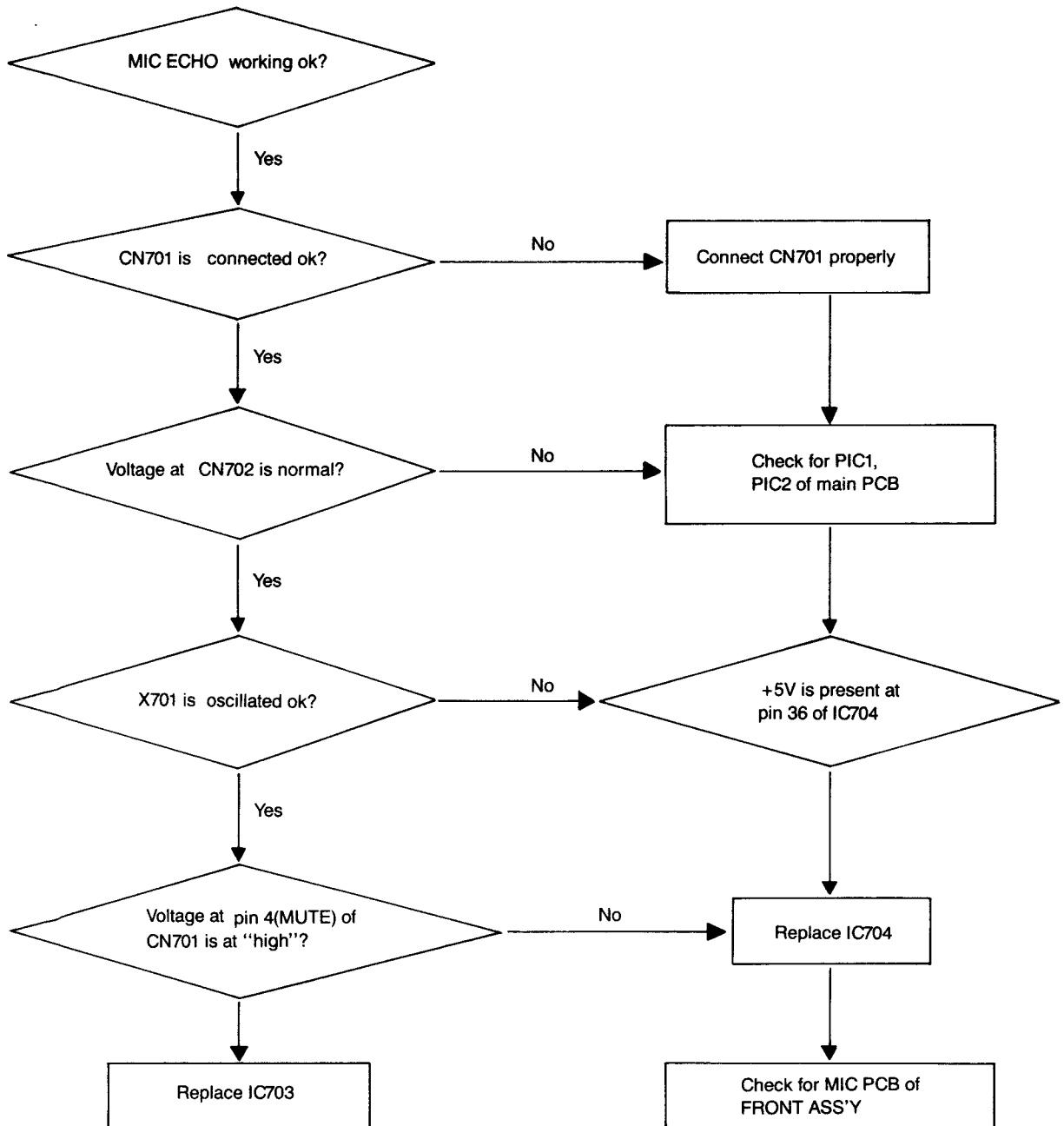
28. TRAY DOES NOT CLOSE



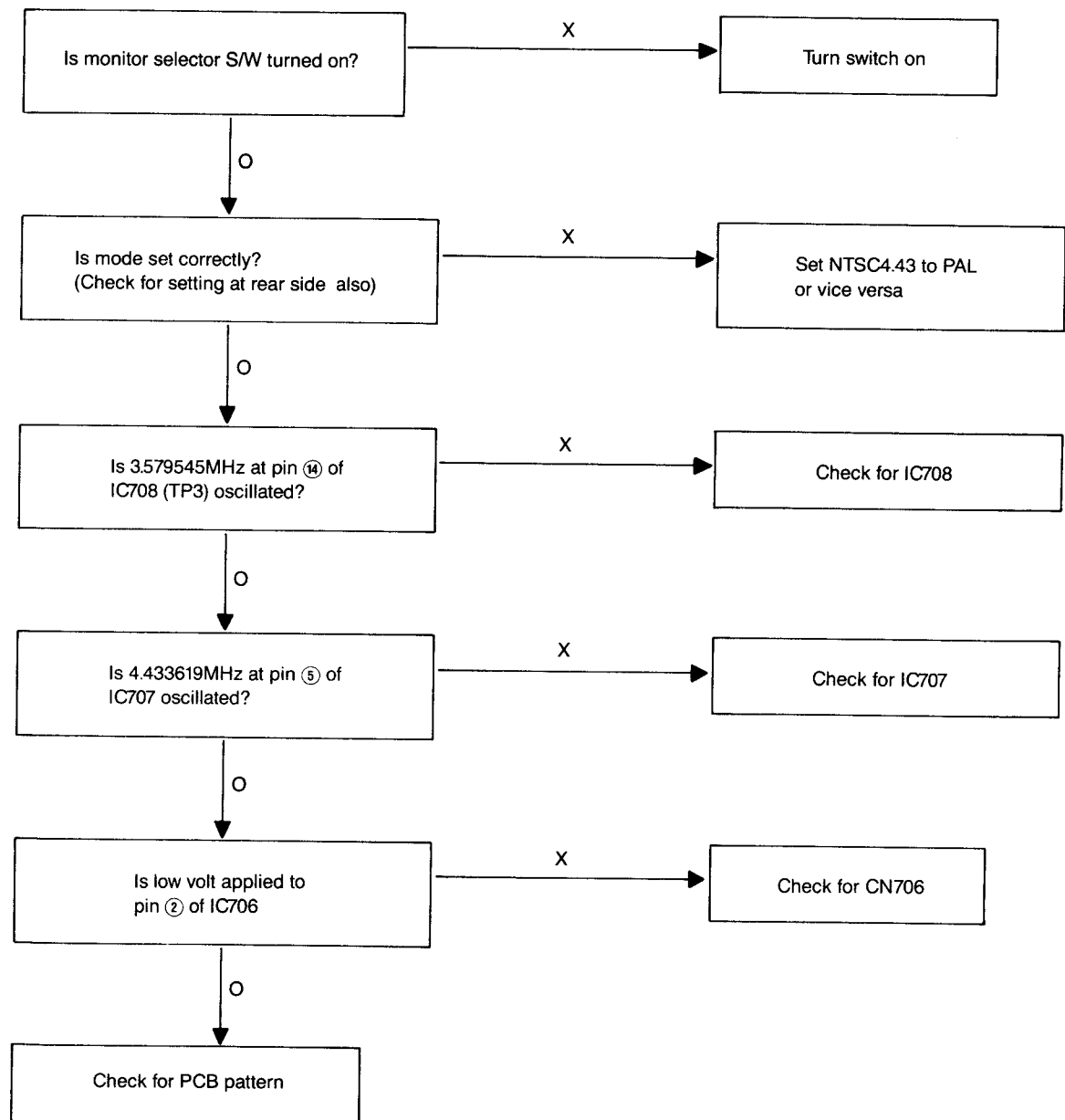
29. TRAY DOESN'T OPEN



30. MIC ECHO DOES NOT WORK



31. NO OUTPUT ON PAL-MODE



8. MICOM IC PIN DESCRIPTION

1. TMP 91P640N: WIC2

I : INPUT O : OUTPUT

PORT		PIN NO.	LABEL	I/O	FUNCTION
	VREF	01	VREF	I	—
	AGND	02	AGND	I	—
P O R T 5	P50	03	—	—	—
	P51	04	SENSE1	I	FG SENSOR INPUT
	P52	05	A+B	I	MISCLAMP CHECK INPUT
	P53	06	SUBQ	I	SUBQ DATA INPUT
	P54	07	CRCF	I	CRC of SUBQ CHECK INPUT
	P55	08	SENSE2	I	INTERNAL STATE OF DSP
P O R T 6	P60	09	SQCK	O	SUBQ CLOCK
	P61	10	MLE	O	DIGITAL FILTER DATA LATCH
	P62	11	SQ	O	COLOR BACK CONTROL 'H': Color Back 'L': Video
	P63	12	MTJ	O	MULTI TRACK JUMP FOR SEARCH
P O R T 7	P70	13	LATCH	O	DATA LATCH
	P71	14	XLT	O	DSP DATA LATCH
	P72	15	SCLK	O	MAIN ↔ FRONT COMMUNICATION CLOCK
	P73	16	TxD	O	MAIN → FRONT DATA TRANSMISSION
P O R T 8	INT0	17	VD	I	VIDEO VERTICAL SYNC. SIGNAL INPUT (16.66ms)
	INT1	18	SRQ	I	MAIN ↔ FRONT DATA TRANSMISSION REQUEST
	INT2	19	TCNT	I	TRACK COUNT
	P83	20	—		
	NMI	21	SCOR	I	SUBQ CODE SYNC. SIGNAL (13ms)
	RESET	22	RESET	I	MICOM RESET
	CLK	23	CLK	—	
P O R T 0	P00	24	LOCK	I	FRAME SYNC. LOCK SIGNAL INPUT FOR DIGITAL DISC
	P01	25	ACK	I	ACKNOWLEDGE SIGNAL INPUT
	P02	26	CD SW	I	'H' WHEN PICK UP POSITIONS IS ON CD
	P03	27	LD SW	I	'H' WHEN PICK UP POSITIONS IS ON LD
	P04	28	TR IN	I	TRAY IN
	P05	29	TR OUT	I	TRAY OUT
	P06	30	—	—	
	P07	31	—	—	

PORT		PIN NO.	LABEL	I/O	FUNCTION
	Vss	32	Vss	—	GROUND (0V)
	X1	33	X1	I	CLOCK (6MHz)
	X2	34	X2	O	CLOCK (6MHz)
P O R T 1	P10	35	JUMP	O	PULSE OUTPUT FOR JUMP
	P11	36	TBCHLD	O	WHEN STILL MODE 1300 μ sec 'H'
	P12	37	LD ON	O	LASER ON: 'L'
	P13	38	LD/CD, CDV	O	CD, CDV: 'H', LD: 'L'
	P14	39	LD, CDV/CD	O	CD: 'H' CDV, LD: 'L'
	P15	40	OPEN	O	OPEN: 'H'
	P16	41	CLOSE	O	CLOSE: 'H'
	P17	42	RFCOR	O	'H': AFTER #8100 FRAME (CAV DISC)
P O R T 2	P20	43	D0	I/O	CHARACTER DATA BUS
	P21	44	D1	I/O	CHARACTER DATA BUS
	P22	45	D2	I/O	CHARACTER DATA BUS
	P23	46	D3	I/O	CHARACTER DATA BUS
	P24	47	D4	I/O	CHARACTER DATA BUS
	P25	48	D5	I/O	CHARACTER DATA BUS
	P26	49	—	—	
	P27	50	Tx/Rx	O	SL220 DATA IN/OUT
P O R T 4	P40	51	SG	O	SELECT SYNC OR GENERATER
	P41	52	RRQ	O	MAIN $\leftrightarrow$ FRONT COMMUNICATION START SYNC
	P42	53	STB	O	DESIGNATE STROBE OF DATA BUS
	P43	54	ATN	O	ATTENTION OUTPUT
	EA	55	Vcc	I	+5V
P O R T 3	P30	56	—	—	—
	P31	57	RxD	I	FRONT $\leftrightarrow$ MAIN COMMUNICATION DATA RECEIVE
	P32	58	SCK	O	DATA TRANSMISSION CLOCK
	P33	59	SDATA	O	SERIAL DATA OUTPUT
	P34	60	—	—	—
	P35	61	CLVSCAN	O	CLEAR SCAN PLAY: 'H'
	P36	62	CCD	I	4D SUM SIGNAL LEVEL CONTROL
	P37	63	FL	I	FOCUS LOCK CHECK
	Vcc	64	Vcc	I	+5V

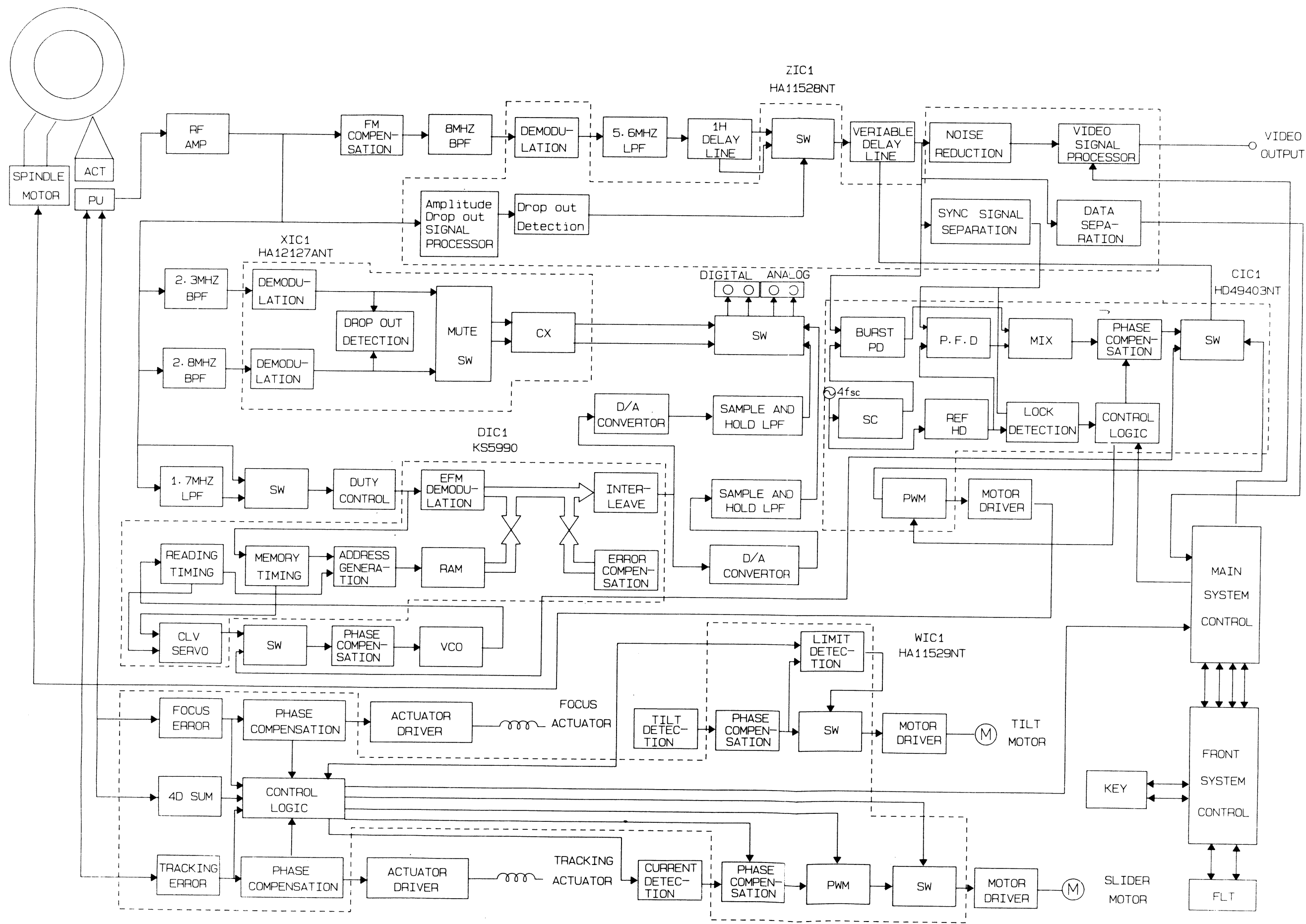
2. TMP 47P1670N: OTP

	PORT	PIN NO.	LABEL	I/O	FUNCTION
	V _{kk}	01	V _{kk}	I	FLT DRIVER VOLT (–33V)
P O R T 0	PC0	02	S0	O	FLT SEGMENT 0 KEY OUT 1
	PC1	03	S1	O	FLT SEGMENT 1 KEY OUT 2
	PC2	04	S2	O	FLT SEGMENT 2 KEY OUT 3
	PC3	05	S3	O	FLT SEGMENT 3 KEY OUT 4
P O R T 4	P40	06	S4	O	FLT SEGMENT 4 KEY OUT 5
	P41	07	S5	O	FLT SEGMENT 5 KEY OUT 6
	P42	08	S6	O	FLT SEGMENT 6 KEY OUT 7
	P43	09	S7	O	FLT SEGMENT 7 KEY OUT 8
P O R T 5	P50	10	S8	O	FLT SEGMENT 8 KEY OUT 9
	P51	11	S9	O	FLT SEGMENT 9 KEY OUT 10
	P52	12	S10	O	FLT SEGMENT 10
	P53	13	SDATA	O	EEPROM DATA
P O R T 0	P00	14	DOWN	I	DOWN KEY INPUT
	P01	15	MORE	I	ONCE MORE KEY INPUT
	P02	16	NATURAL	I	NATURAL KEY INPUT
	P03	17	STD/KAR	I	STD/KAR SELECT SW INPUT
	TEST	18	—	—	—
	XIN	19	XIN	I	X-TAL IN
	XOUT	20	XOUT	O	X-TAL OUT
	/RESET	21	RESET	I	MICOM RESET
	/HOLD	22	—	—	—
	P00	23	MUTE 2		MUTE FOR POP NOISE
P O R T 6	R60	24	KIN1	I	KEY INPUT 1
	R61	25	KIN2	I	KEY INPUT 2
	R62	26	KIN3	I	KEY INPUT 3
P O R T 1	R63	27	KIN4	I	KEY INPUT 4
	P10	28	2/R	O	AUDIO R CHANNEL
	P11	29	MUTE	O	AUDIO MUTE
	P12	30	DIG/ANA	O	DIGITAL ANALOG SOUND SELECT
	P13	31	LED 5	O	LED DIRECT DRIVE
	V _{ss}	32	V _{ss}	I	GROUND

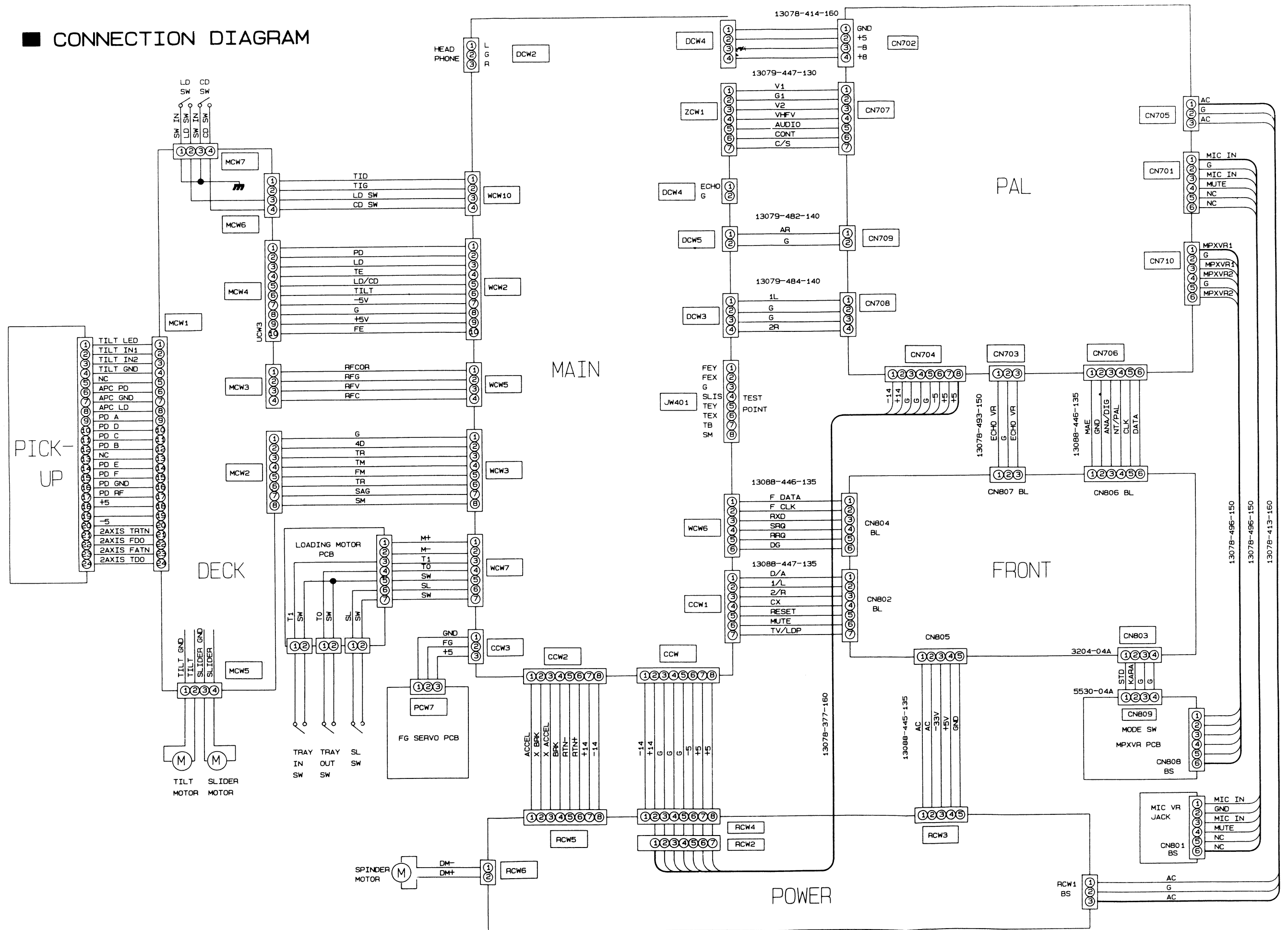
	PORT	PIN NO.	LABEL	I/O	FUNCTION
P O R T 2	P20	33	LED 1	O	LED DIRECT DRIVE
	P21	34	LED 2	O	LED DIRECT DRIVE
	P22	35	LED 3	O	LED DIRECT DRIVE
	P23	36	LED 4	O	LED DIRECT DRIVE
P O R T 7	P70	37		I/O(O)	LED DRIVE IC (LS145) CONTROL
	P71	38		I/O(O)	LED DRIVE IC (LS145) CONTROL
	P72	39		I/O(O)	LED DRIVE IC (LS145) CONTROL
	P73	40		I/O(O)	LED DRIVE IC (LS145) CONTROL
P O R T 8	P80	41	REMOCON	I	REMOCON INPUT
	P81	42	SRQ	O	SEND REQUEST TO MAIN MICOM
	P82	43	—	—	—
	P83	44	RRQ	I	RECEIVE REQUEST FROM MAIN MICOM
P O R T 9	P90	45	RXD	I	COMMUNICATION RECEIVE DATA
	P91	46	TXD	O	COMMUNICATION TRANS DATA
	P92	47	SCLK	I	SERIAL CLOCK
P O R T 3	P30	48	/CX	—	CX NOISE REDUCTION
	P31	49	LDP/TV	O	LDP/TV SELECT
	P32	50	I/L	O	AUDIO L CHANNEL
	P33	51	—	—	—
P O R T A	PA0	52	MAE	O	MULTI AUDIO ENABLE
	PA1	53	SCLK2	O	SERIAL CLOCK TO EEPROM
	PA2	54	HIFI	O	HIFI MULTI AUDIO OUTPUT
	PA3	55	G8	O	GRID OUTPUT
P O R T B	PB0	56	G7	O	GRID OUTPUT
	PB1	57	G6	O	GRID OUTPUT
	PB2	58	G5	O	GRID OUTPUT
	PB3	59	G4	O	GRID OUTPUT
G / S	G3	60	G3	O	GRID OUTPUT
	G2	61	G2	O	GRID OUTPUT
	G1	62	G1	O	GRID OUTPUT
	G0	63	G0	O	GRID OUTPUT
	Vdd	64	Vdd	I	+5V

MEMO

OVERALL

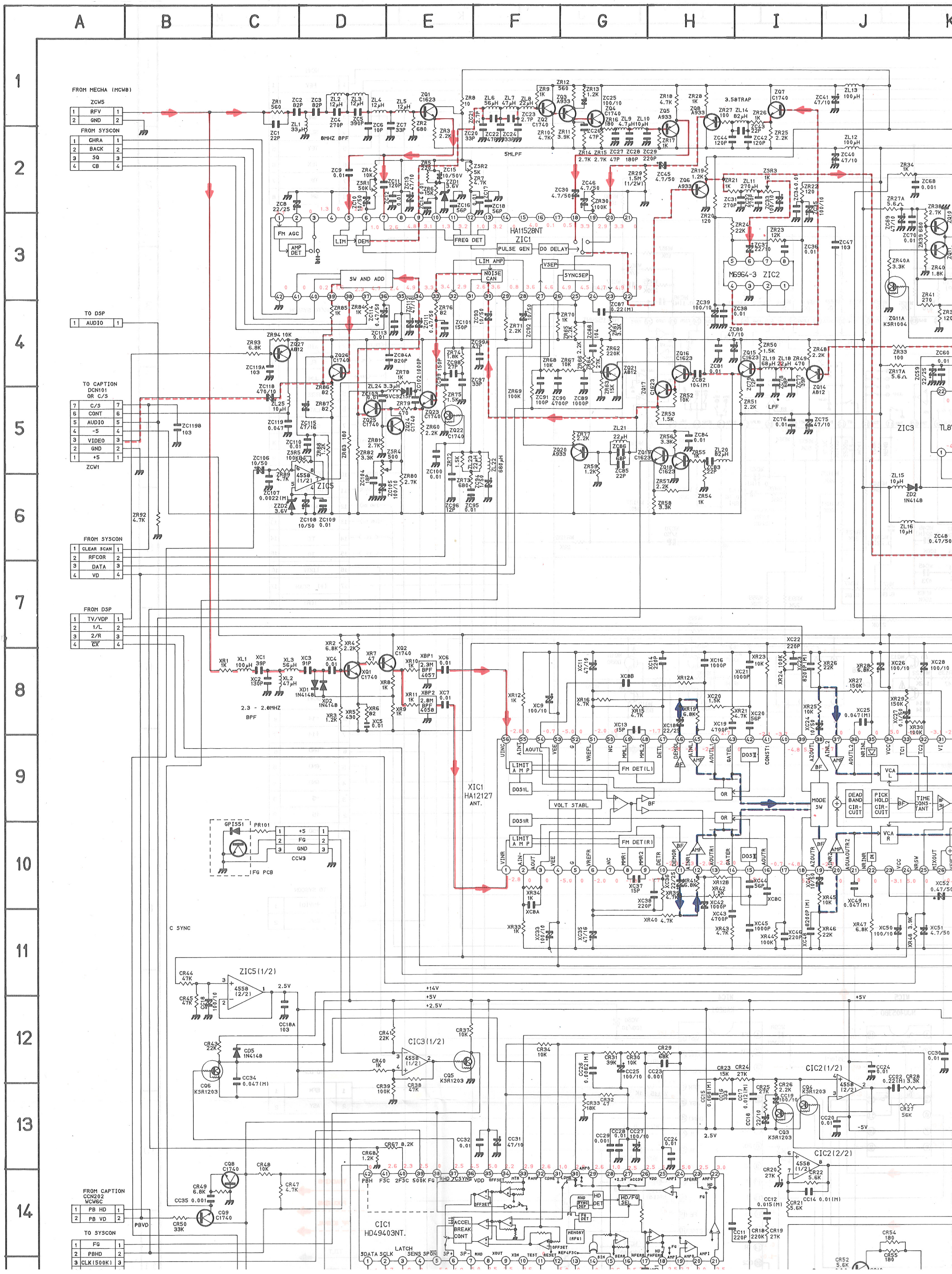


CONNECTION DIAGRAM



1) VIDEO

① MAIN SCHEMATIC DIAGRAM (1/4)



1	TV/VDP	1
2	1/L	2
3	2/R	3
4	EX	4

8

9

10

11

12

13

14

15

16

FROM CAPTION CCN202 MCWGC			
1	PB HD	1	
2	PB VD	2	
TO SYSCON			
1	FG	1	
2	PBHD	2	
3	CLK (500K)	3	
4	SDATA	4	
5	SCLK	5	
6	LATCH	6	
7	SENS	7	
8	RESET	8	
9	SG	9	
10	4FSC	10	
11	XTBCHLD	11	

A

B

C

D

E

F

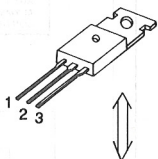
G

H

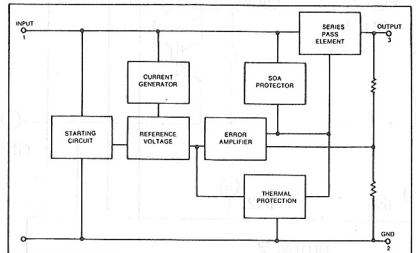
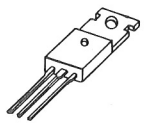
I

J

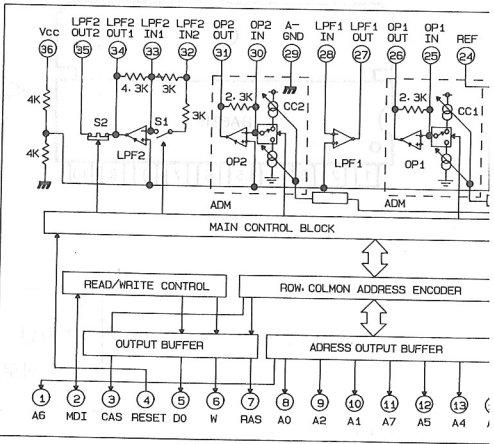
MC 7908C (PIC2)
— Regulator

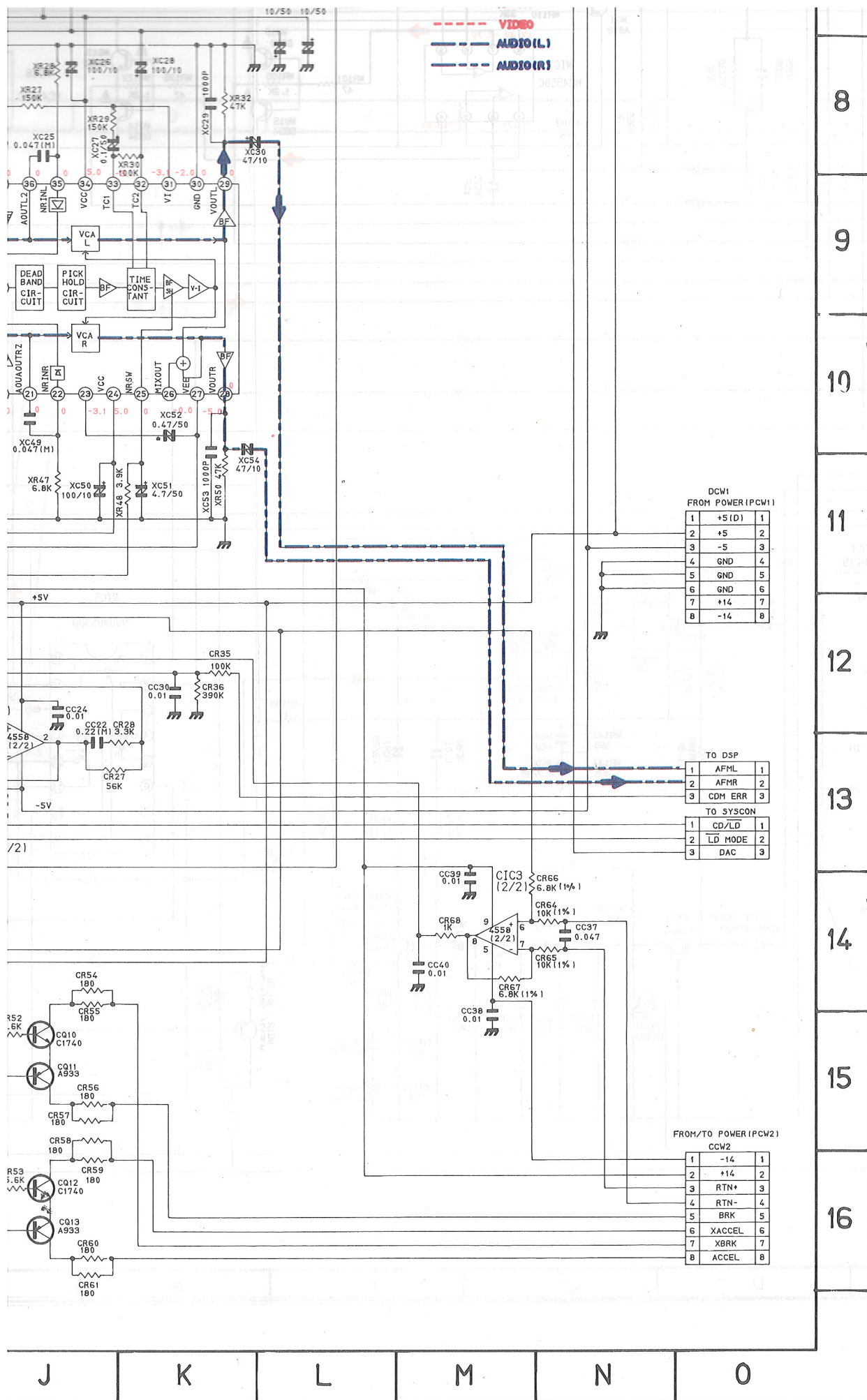


MC 78 T05 (PIC3)
— Regulator

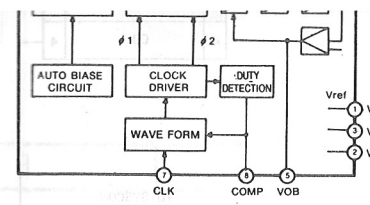


M50195P
DIGITAL ECHO





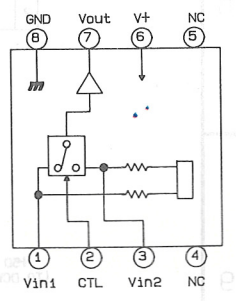
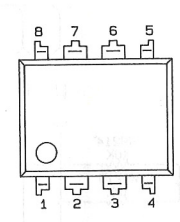
8
9
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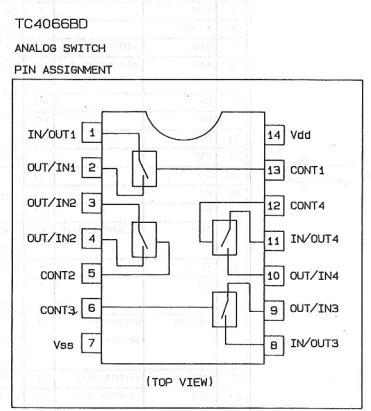
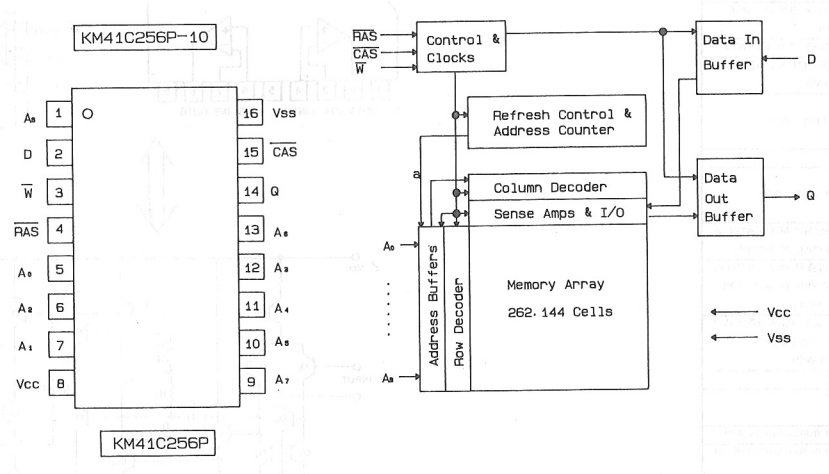
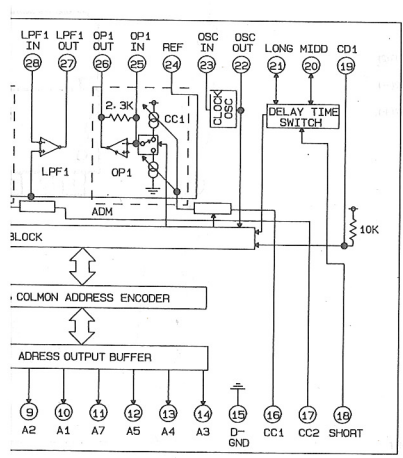
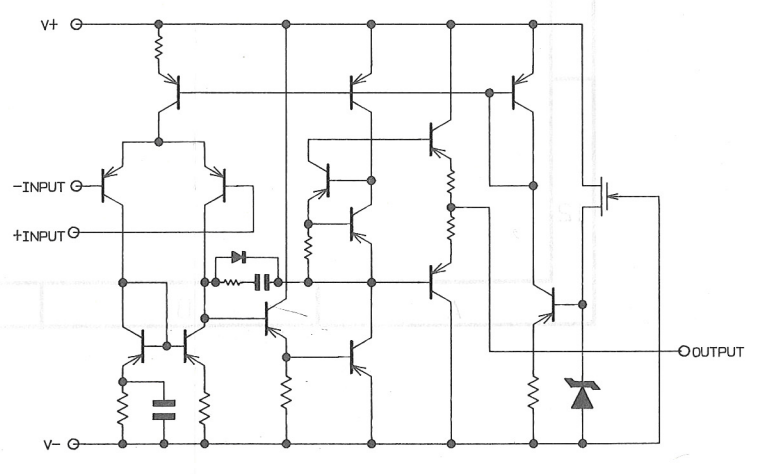
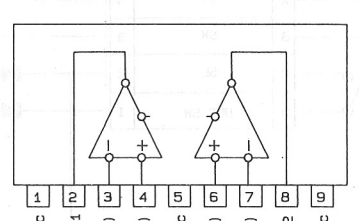
PIN FUNCTION TABLE

PIN NO.	SYM-BOL	FUNCTION	PIN NO.	SYM-BOL	FUNCTION
1	Vdd	9V POWER SUPPLY	5	VOB	OUTPUT FEEDBACK BIAS
2	Vss	GND	6	VID IN	SIGNAL INPUT
3	Vcc	5V POWER SUPPLY	7	CLK	CLOCK
4	OUT	DELAYED CIRCUIT	8	CLMP	CLOCK DUTY DETECTION

NJM2233BD
VIDEO SWITCH

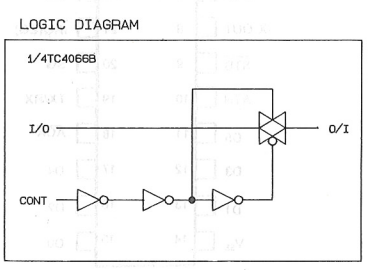


NJM2068SD
OP AMP

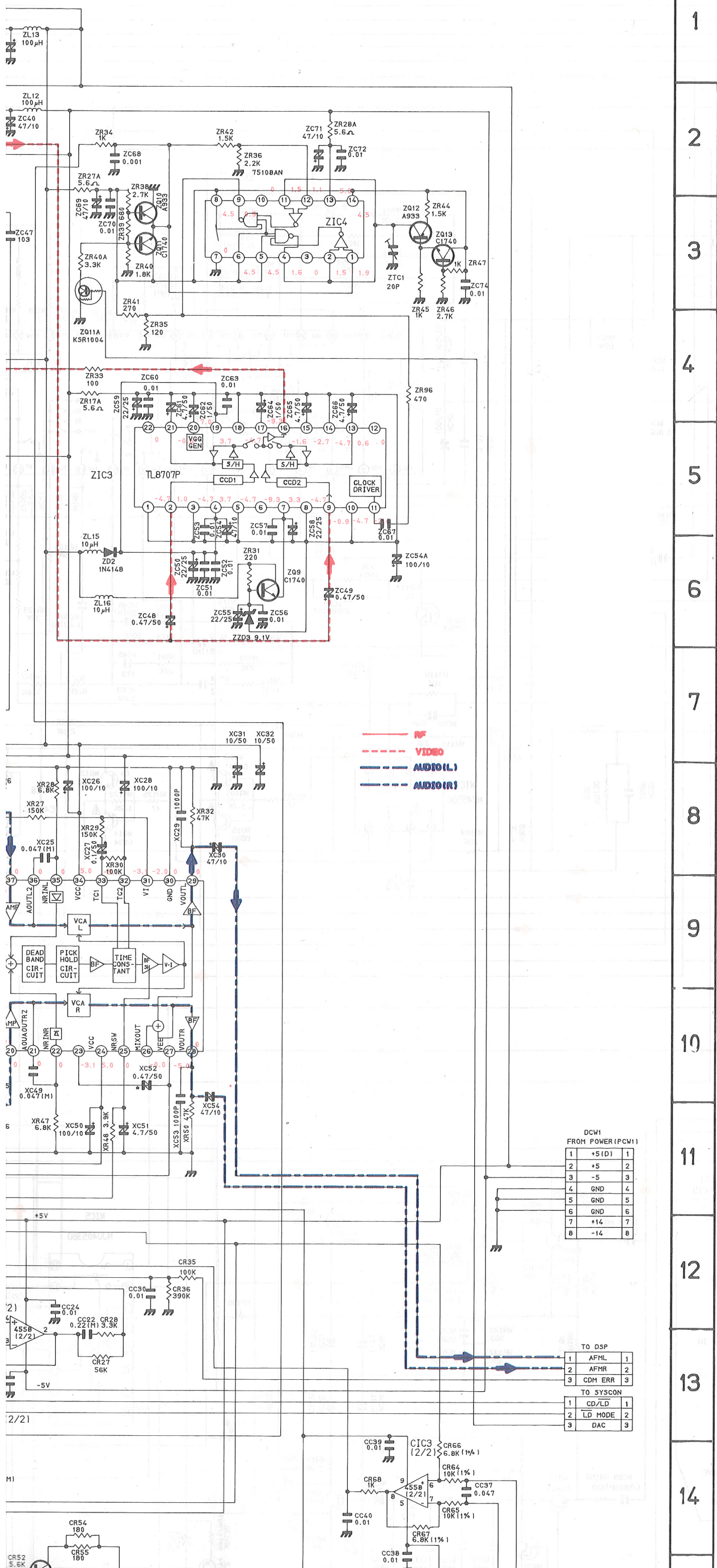


TRUTH TABLE

CONTROL	Impedance Between IN/OUT-OUT/IN
H	0.5-5x10 ⁸ Ω
L	>10 ⁸ Ω



J K L M N O



DCW1 FROM POWER (PCW1)

1	+5(D)	1
2	+5	2
3	-5	3
4	GND	4
5	GND	5
6	GND	6
7	+14	7
8	-14	8

TO DSP

1	AFML	1
2	AFMR	2
3	CDM ERR	3

TO SYSCON

1	CD/LD	1
2	LD MODE	2
3	DAC	3

TRANSISTOR

TR	1	2	3
2SC 635, 2SC1740			
2SA 933	E	C	B
KSR1002, KSR1003			
KSR1203, KSR2003			
KSD 471	E	B	C
2SK 184	D	G	S

CHIP TR

TR	1	2	3
NJE 170171/172	E	C	B

HIGH POWER TR (Low Frequency Power Amp)

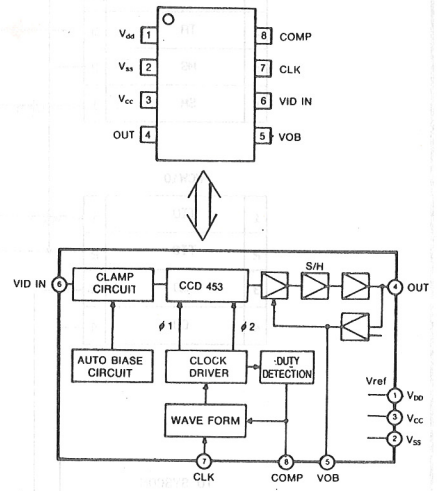
TR	1	2	3
KSD 880	B	C	E
KSD 834	B	C	E

REGULATOR IC

IC	1	2	3
MC 7808 C	IN	GND	OUT
MC 78105 C	IN	GND	IN
MC 7908 C	IN	GND	OUT

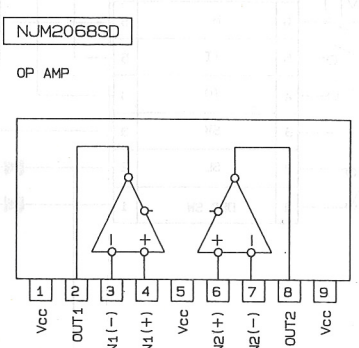
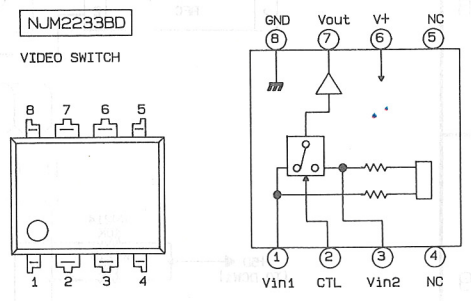
B: Base
C: Collector
E: Emitter

MSM 6904-3RS (ZIC2)
— /H DELAY



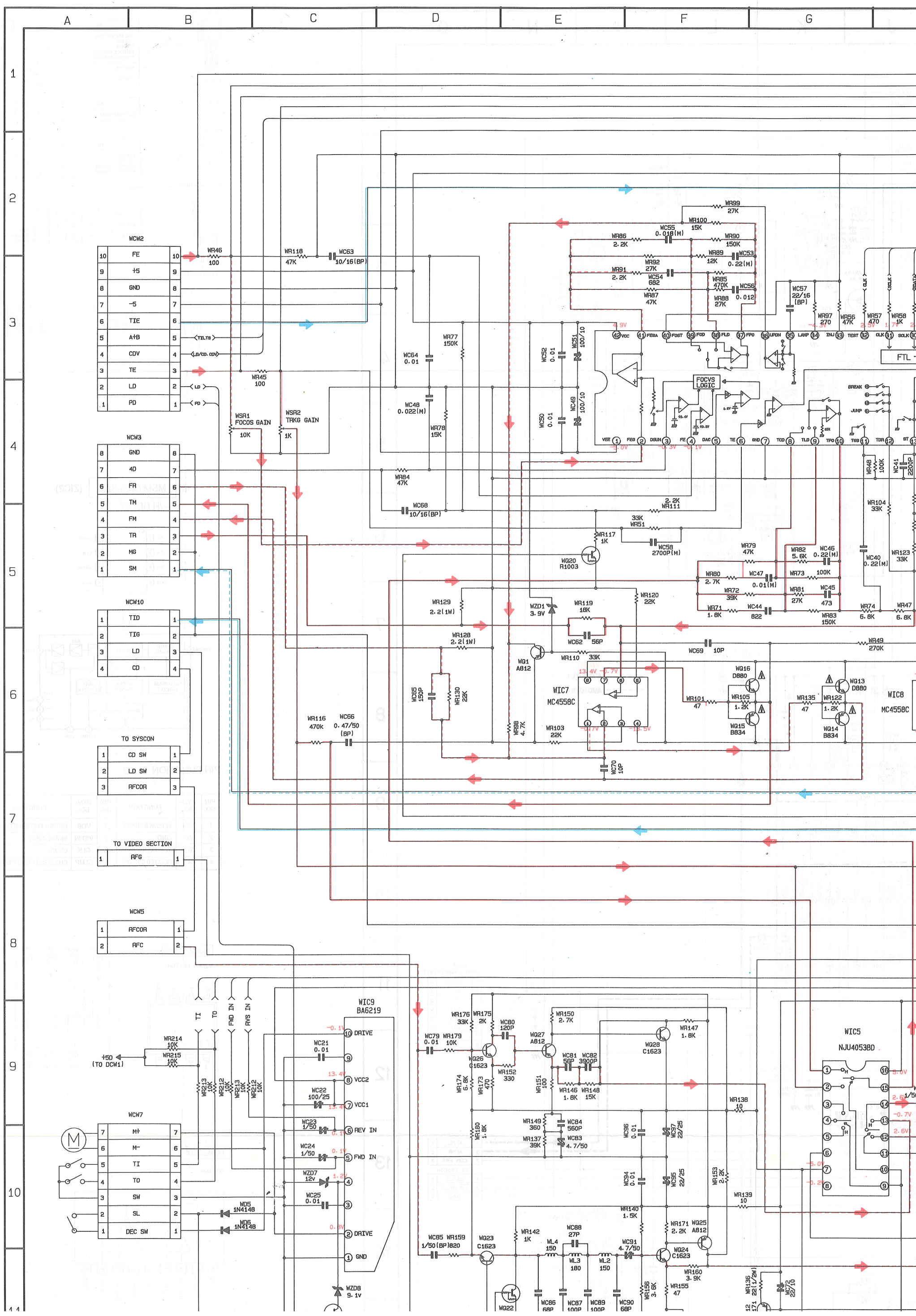
PIN FUNCTION TABLE

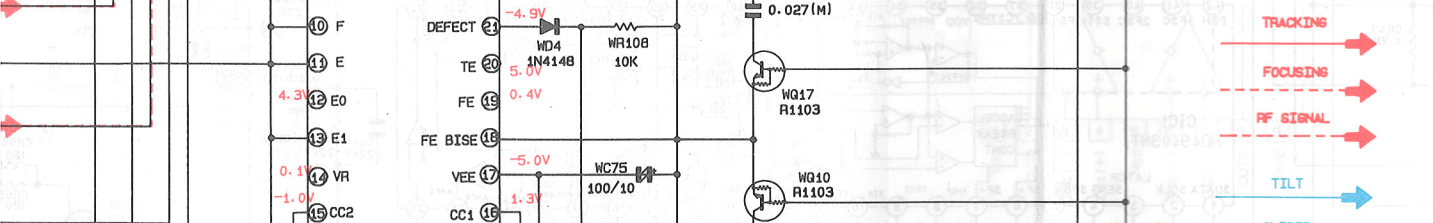
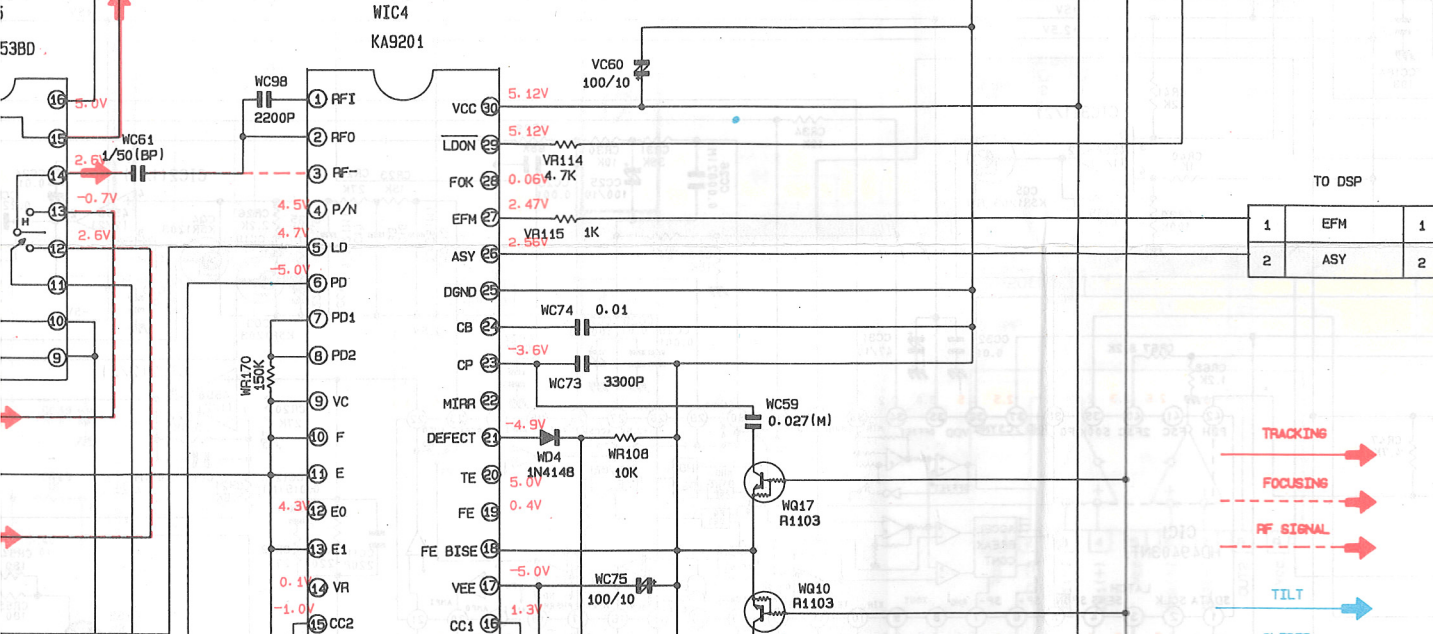
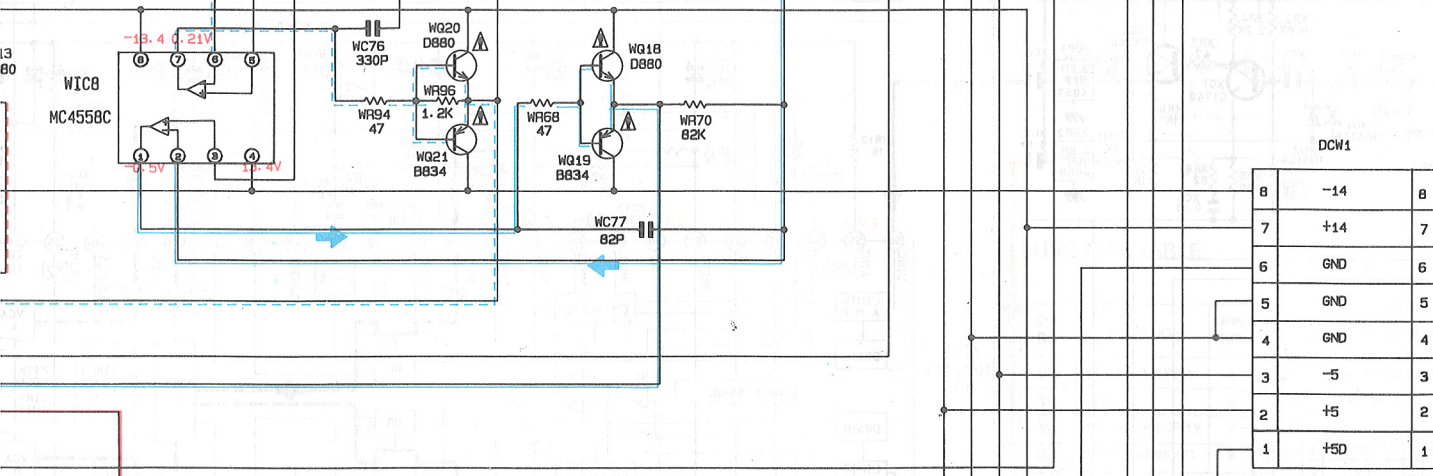
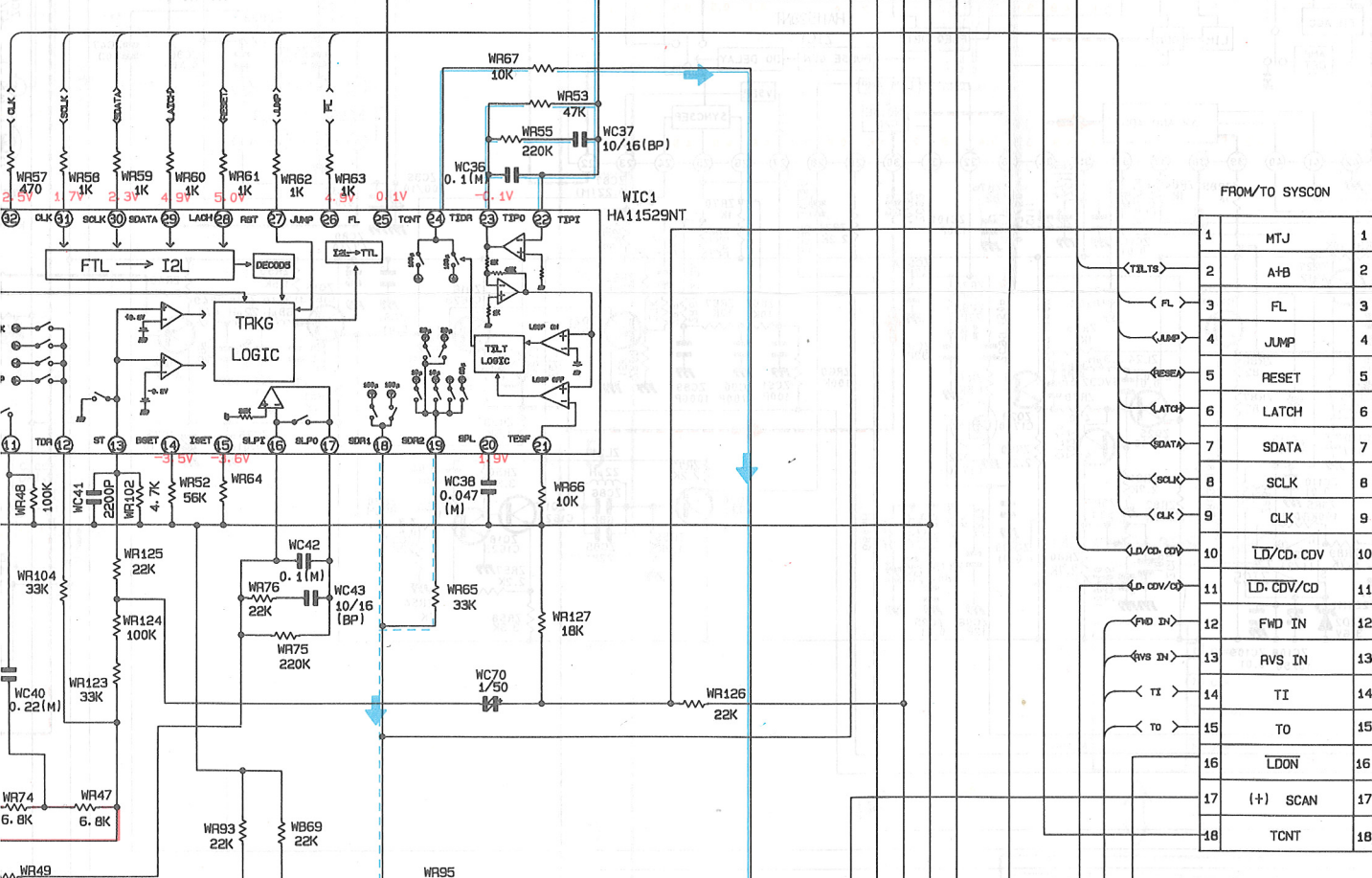
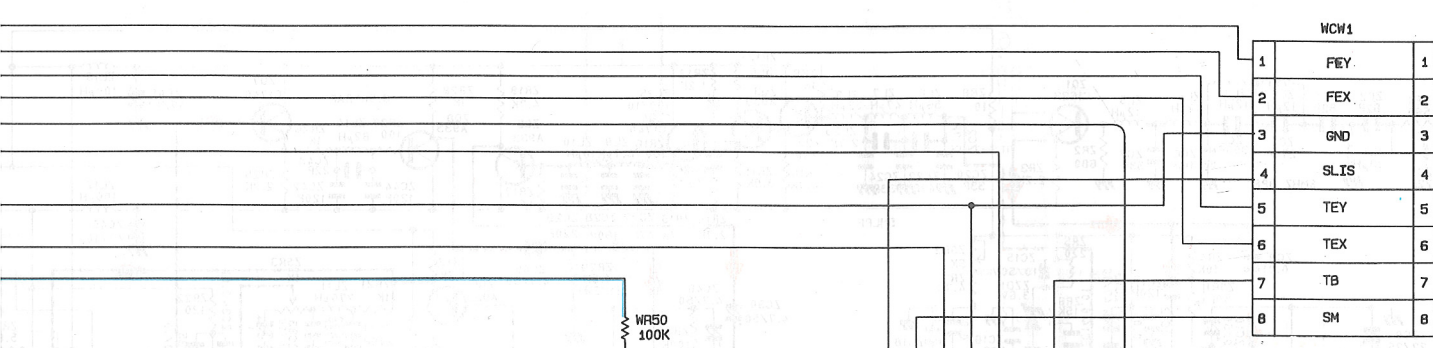
PIN NO.	SYM-BOL	FUNCTION	PIN NO.	SYM-BOL	FUNCTION
1	Vdd	9V POWER SUPPLY	5	VOB	OUTPUT FEEDBACK BIAS
2	Vss	GND	6	VID IN	SIGNAL INPUT
3	Vcc	5V POWER SUPPLY	7	CLK	CLOCK
4	OUT	DELAYED CIRCUIT	8	CLMP	CLOCK DUTY DETECTION



2) SERVO

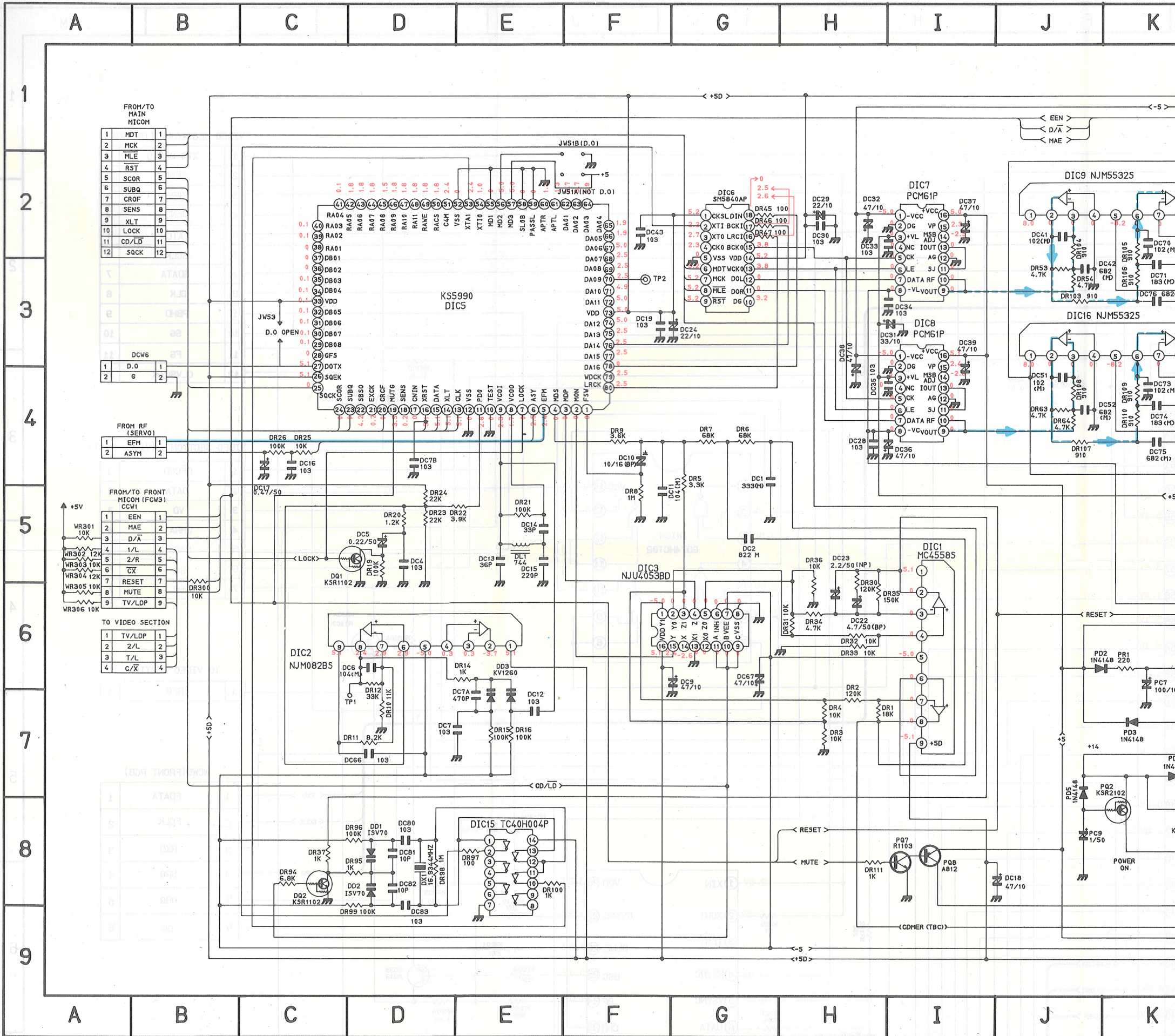
① MAIN SCHEMATIC DIAGRAM (2/4)



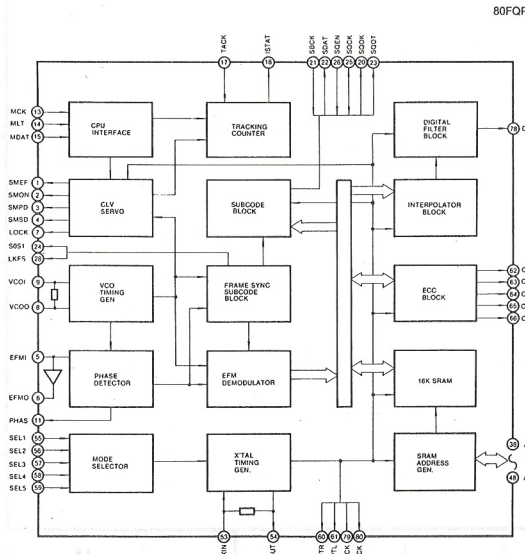


3) DSP

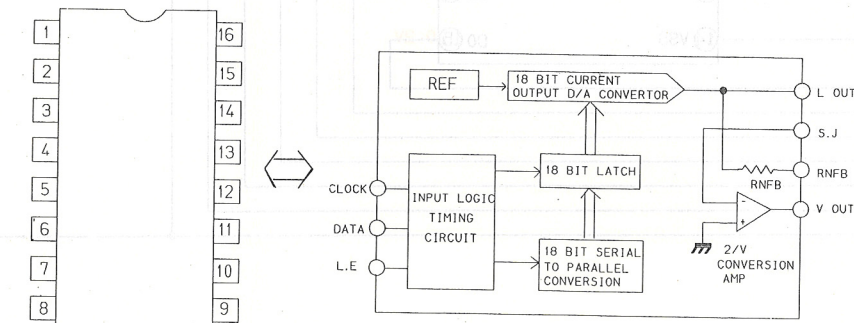
① MAIN SCHEMATIC DIAGRAM (3/4)



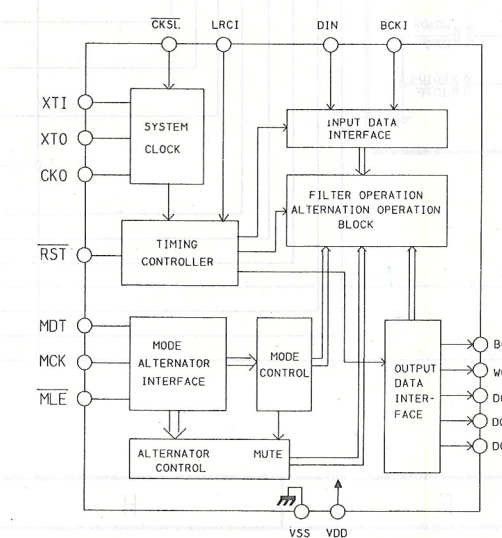
● KS5990/KS59910 (DIC5)
— DSP (Digital Signal Processor)

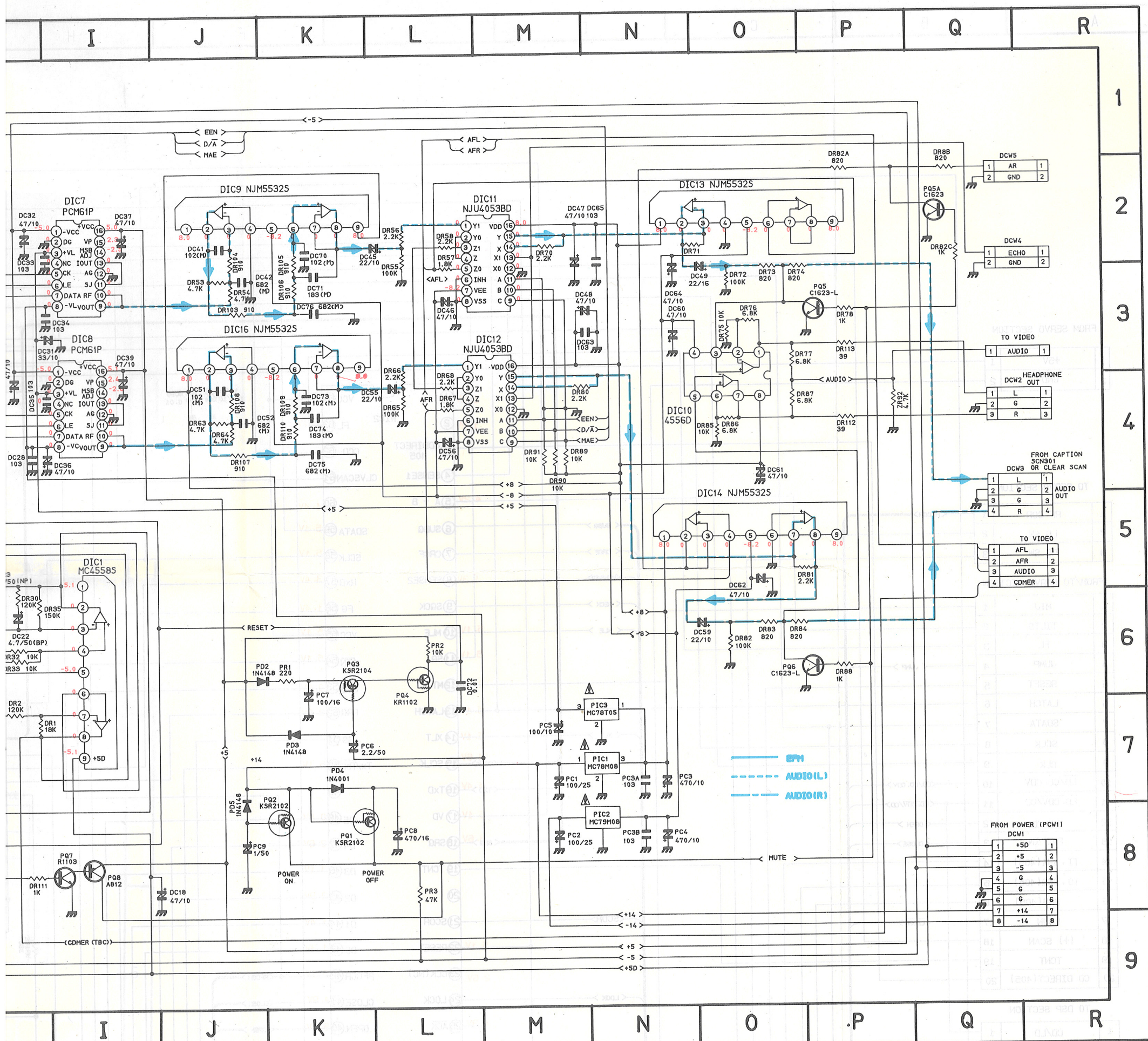


● PCM 61P (DIC7, 8)
— DAC (Digital To Analog Converter)

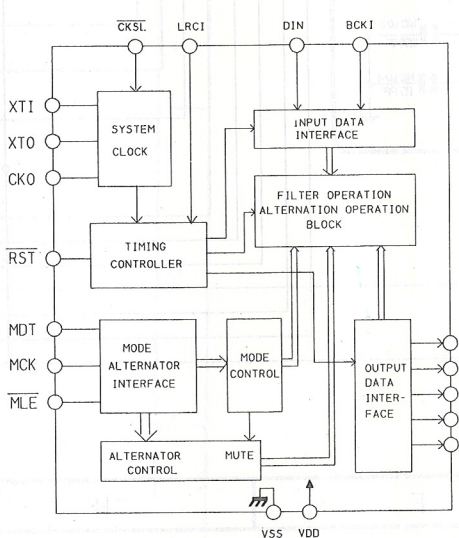


● SM 5840AP (DIC6)
— Digital Filter

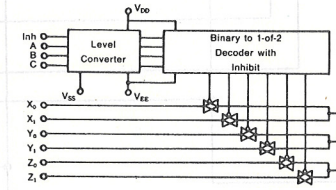
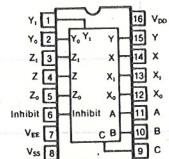




● SM 5840AP (DIC6)
— Digital Filter



● NJU 4053 BD (DIC 3, 11, 12, WIC5)
— CMOS AN/SW



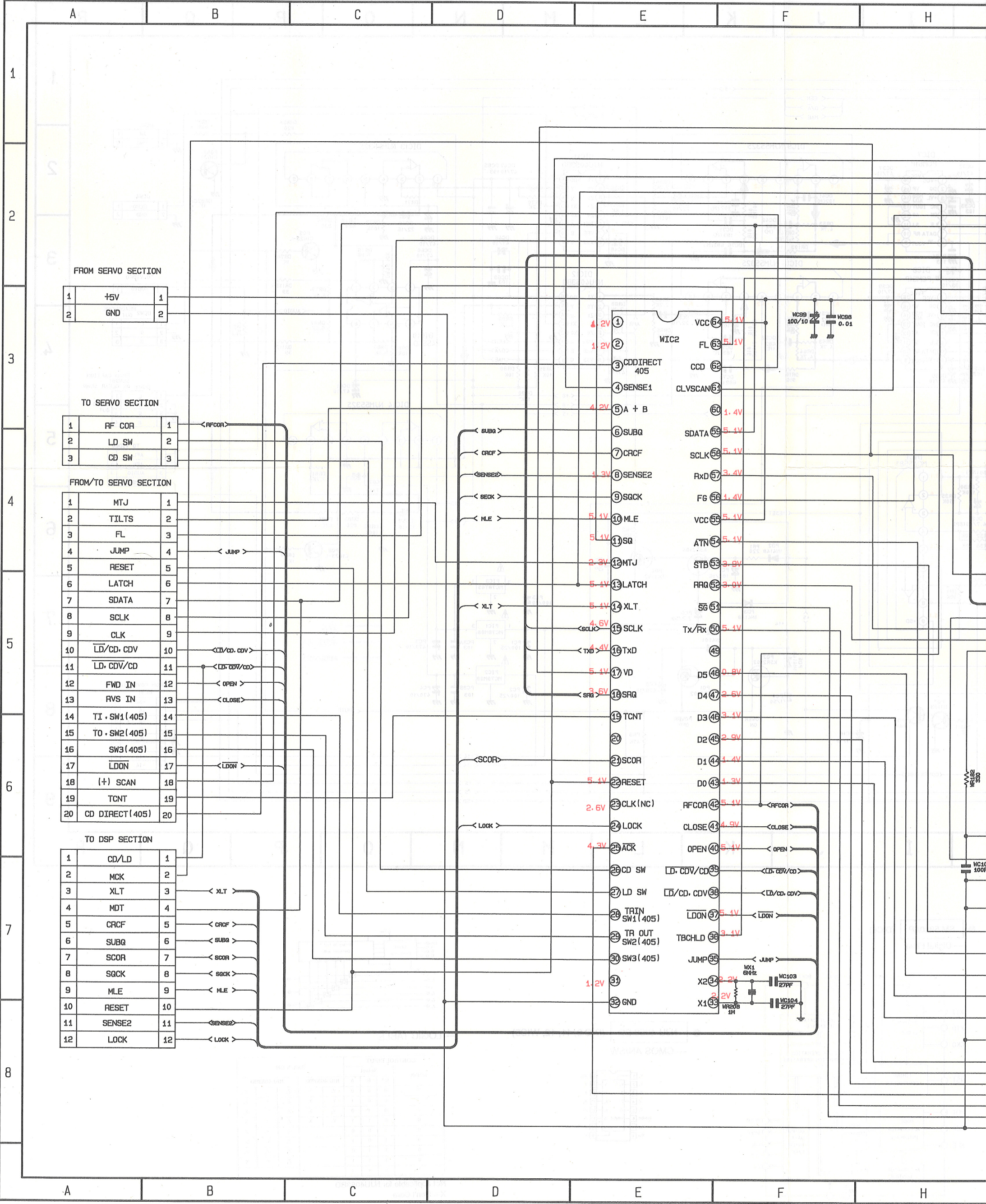
— LOGIC TABLE

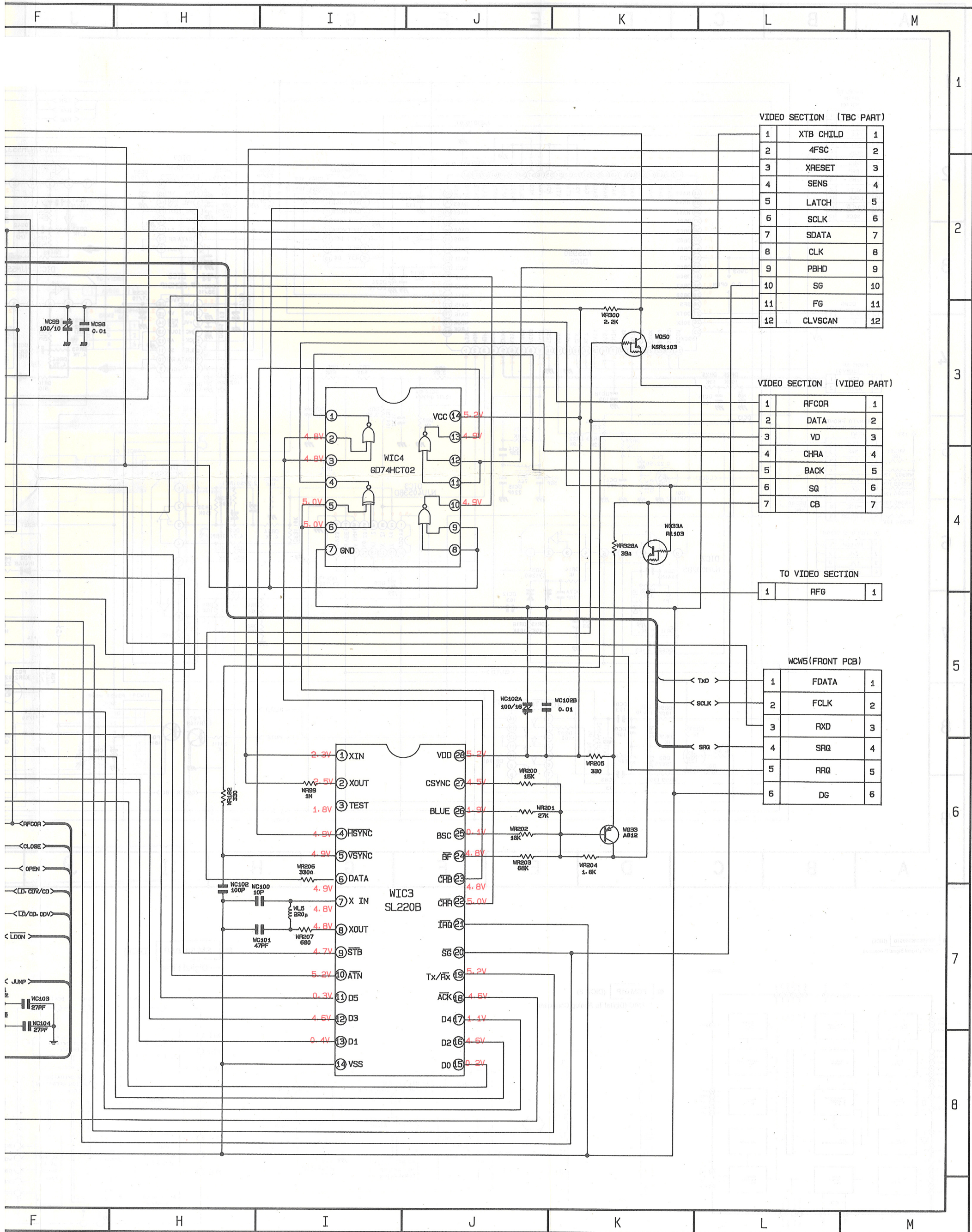
CONTROL INPUT			Switch ON			
Inhibit	Select		NJU 4052BD		NJU 4053BD	
C*	B	A	Y ₀	X ₀	Z ₀	Y ₀
0	0	0	Y ₀	X ₀	Z ₀	Y ₀
0	0	1	Y ₁	X ₁	Z ₁	Y ₁
0	1	0	Y ₂	X ₂	Z ₂	Y ₂
0	1	1	Y ₃	X ₃	Z ₃	Y ₃
1	0	0	Z ₀	Y ₀	X ₀	Z ₀
1	0	1	Z ₁	Y ₁	X ₁	Z ₁
1	1	0	Z ₂	Y ₂	X ₂	Z ₂
1	1	1	Z ₃	Y ₃	X ₃	Z ₃
1	x	x	x	x	x	x

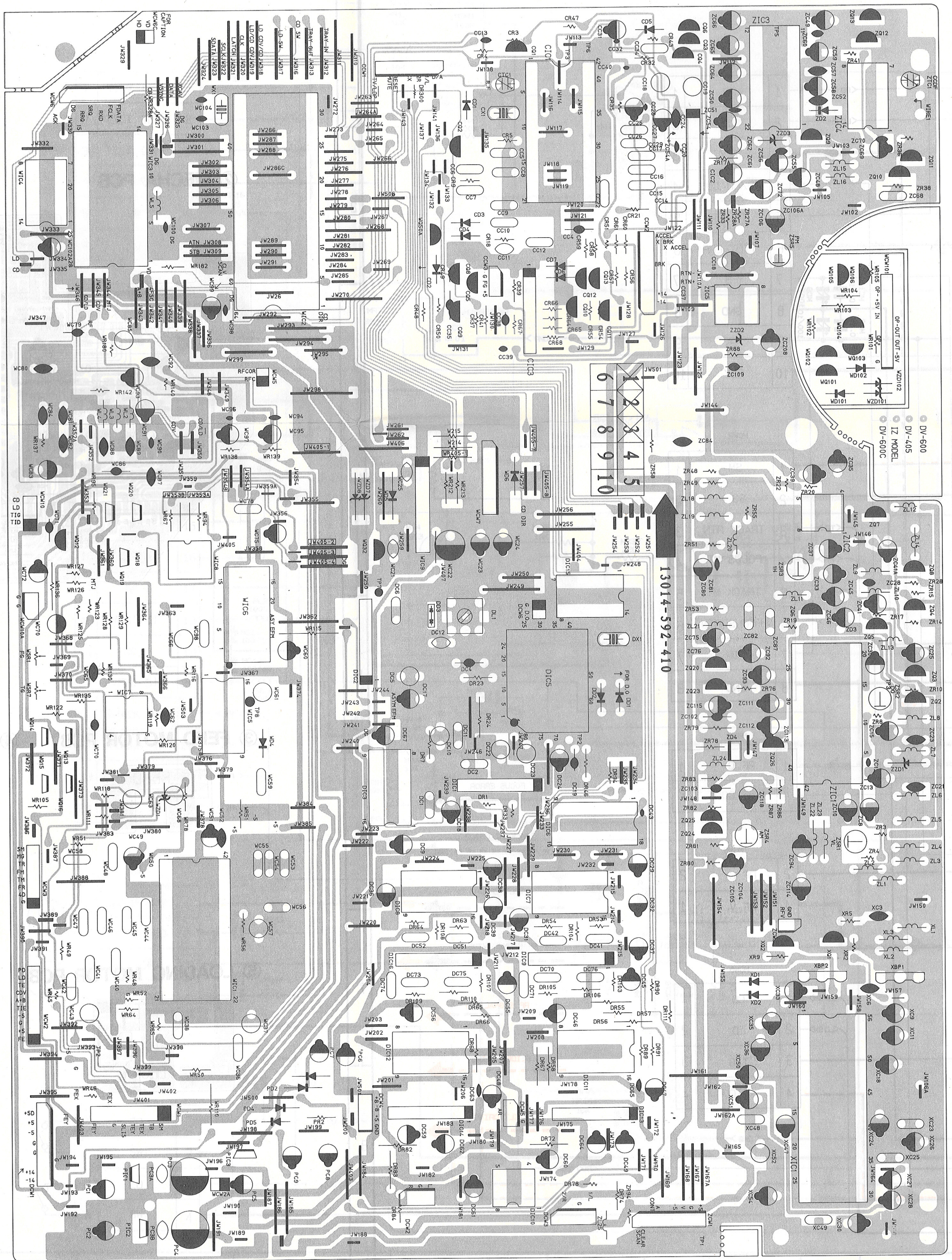
Not applicable for NJU4053BD
X = Don't Care

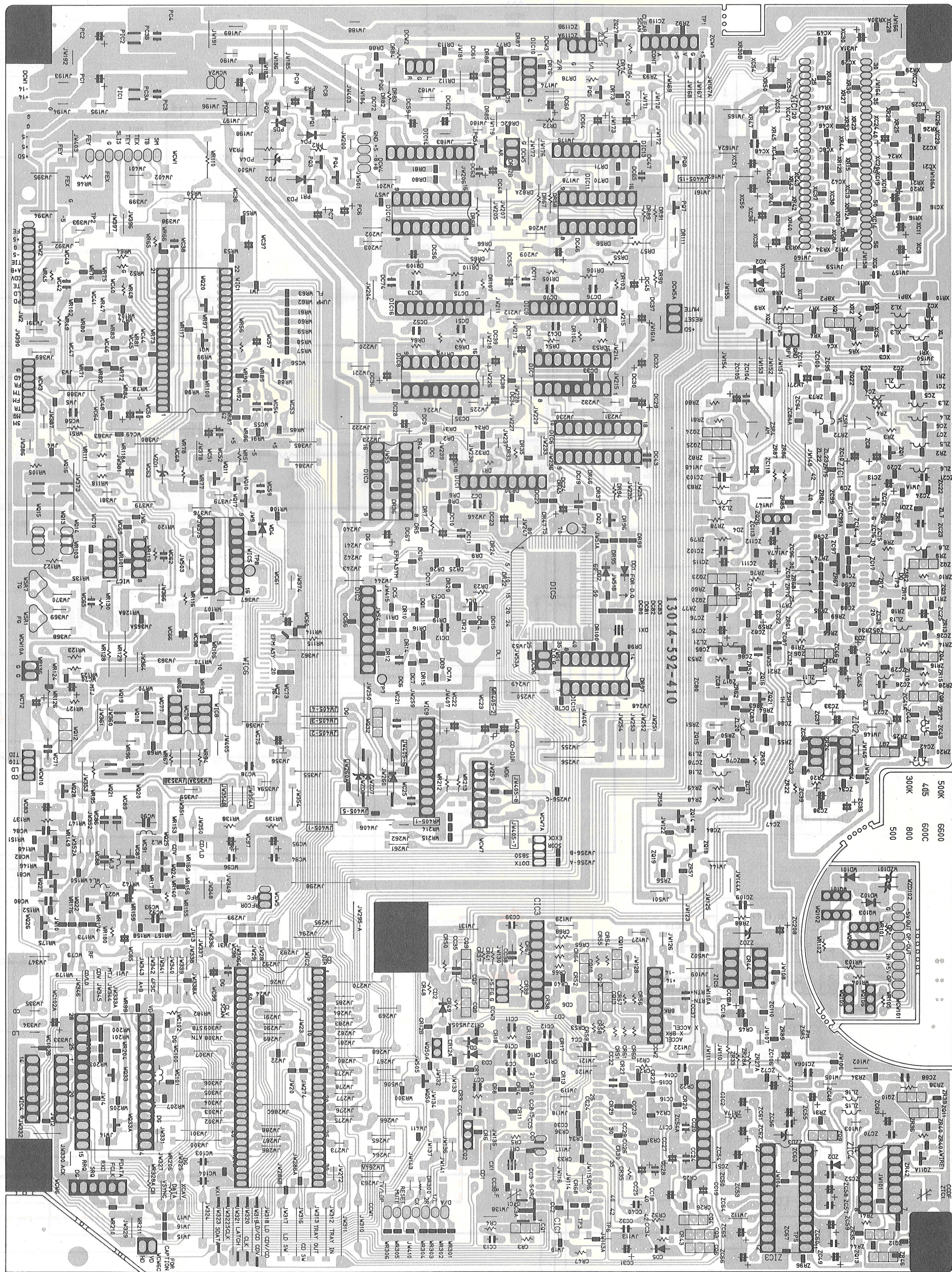
4) SYSTEM CONTROL

① MAIN SCHEMATIC DIAGRAM (4/4)







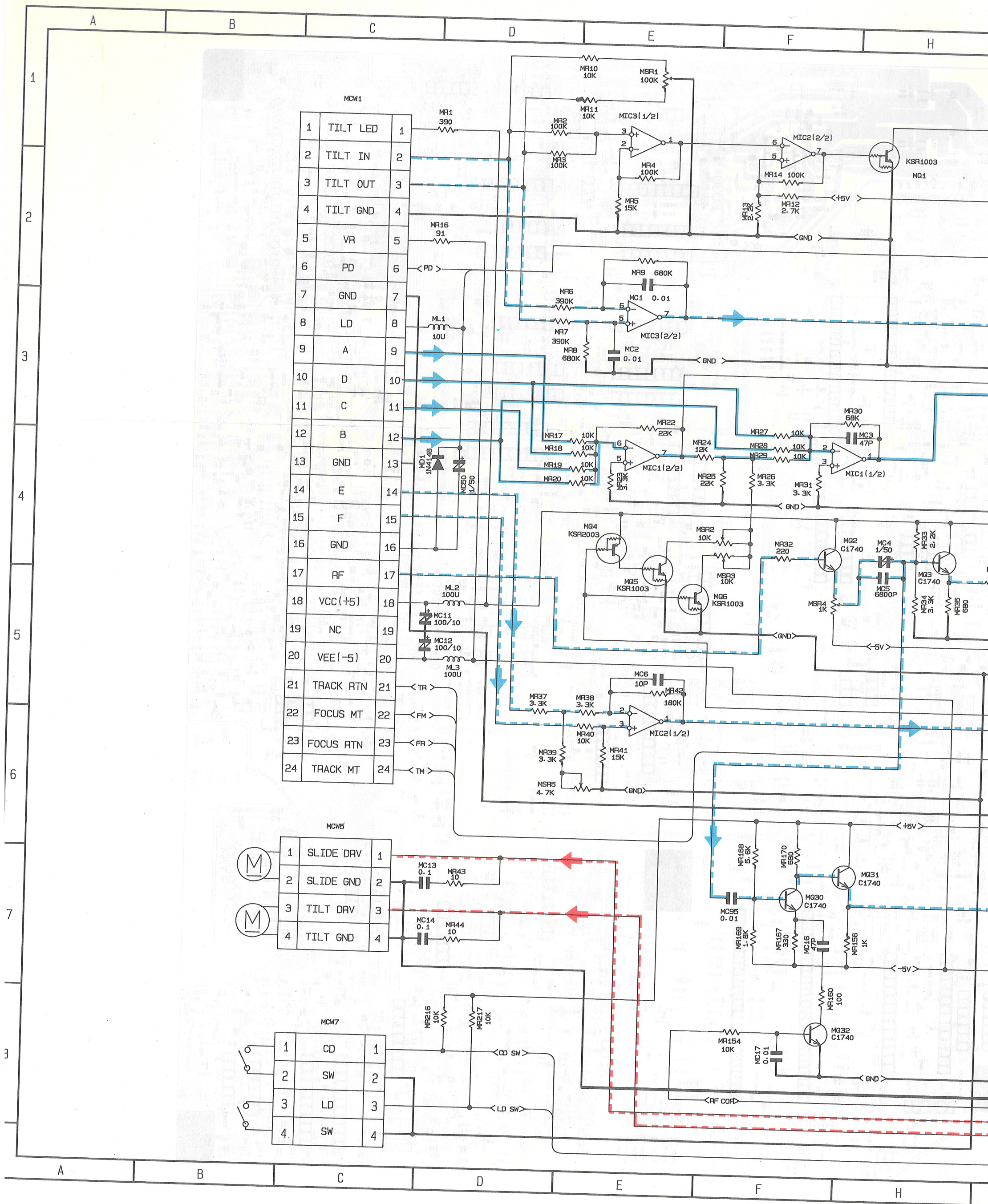


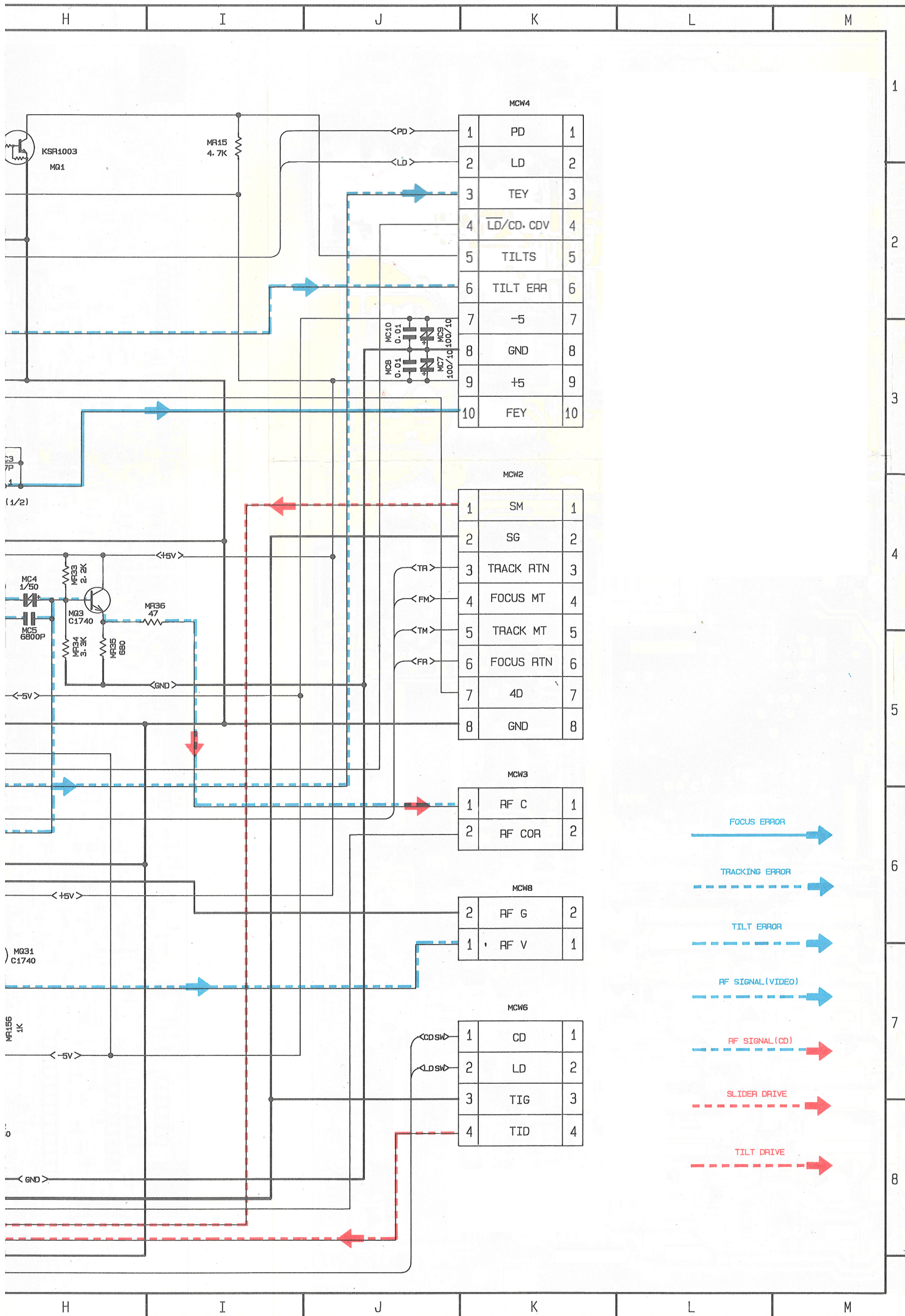
500K
405
500C
800
500

13014-592-410

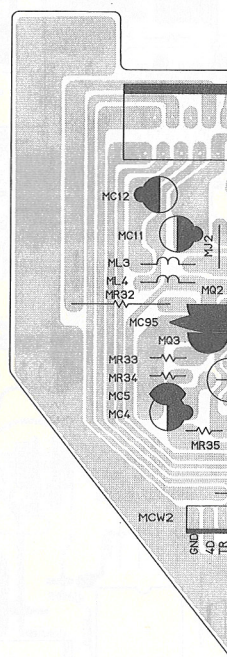
6) MECHA

① SCHEMATIC DIAGRAM

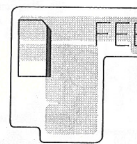




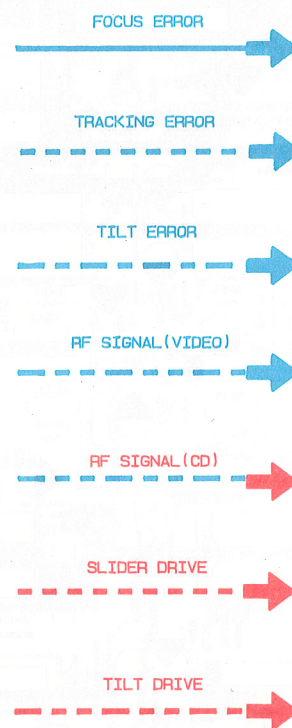
② MECHA

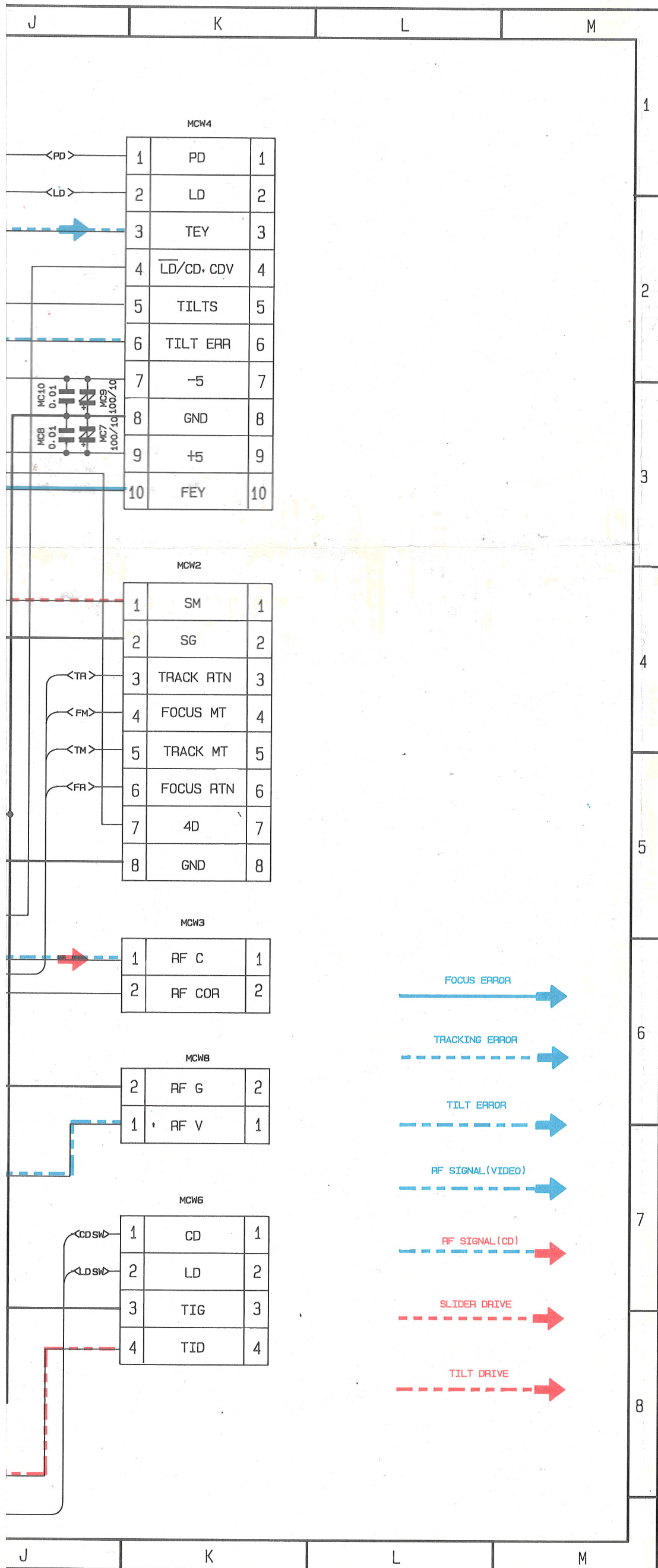


③ FEED MO

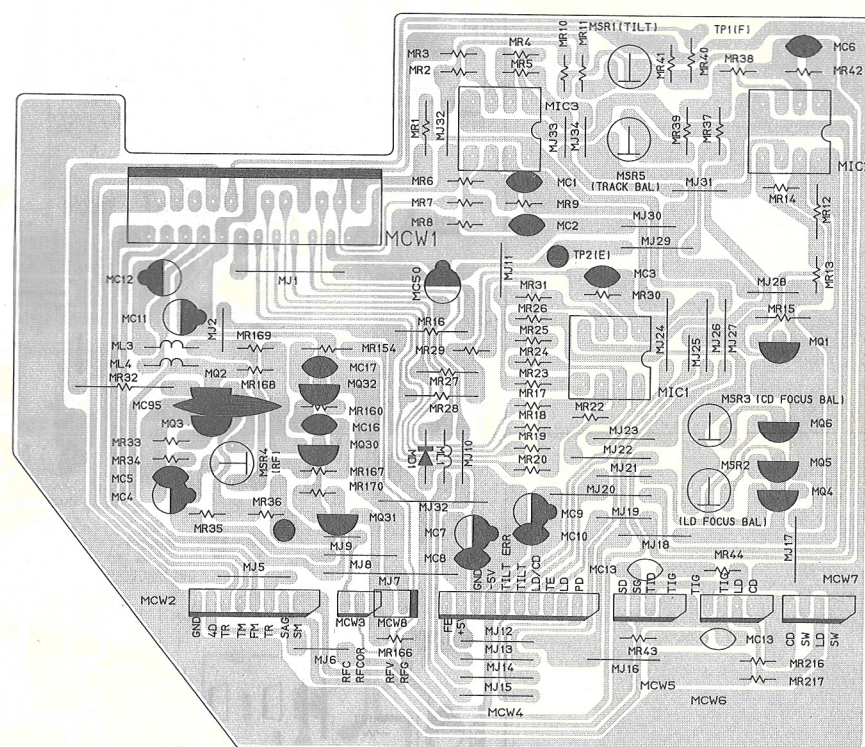


⑤ LOADING

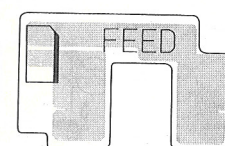




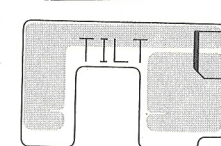
② MECHA PCB



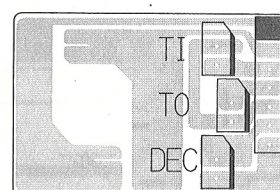
③ FEED MOTOR PCB



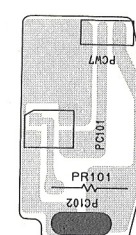
④ TILT MOTOR PCB



⑤ LOADING MOTOR PCB

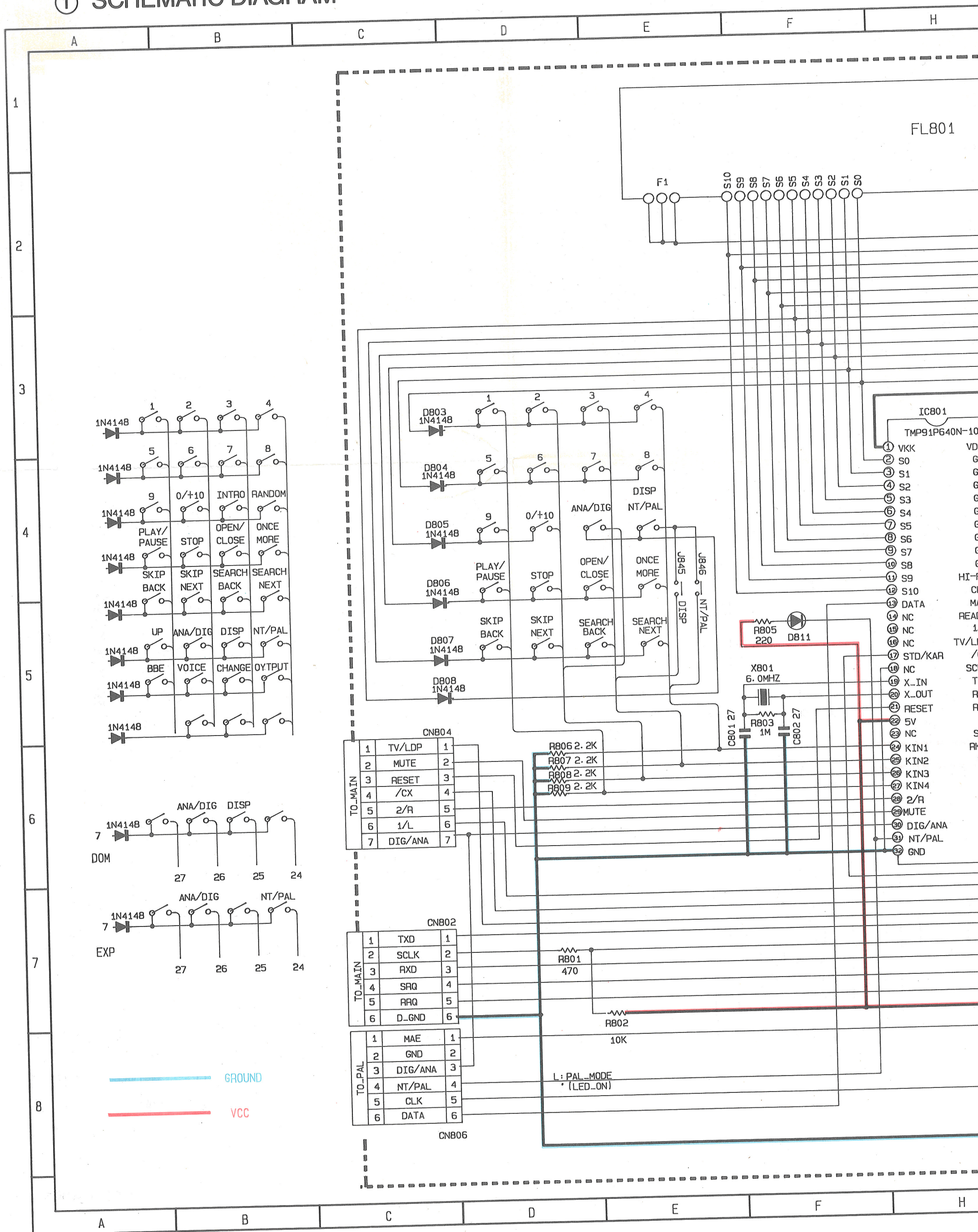


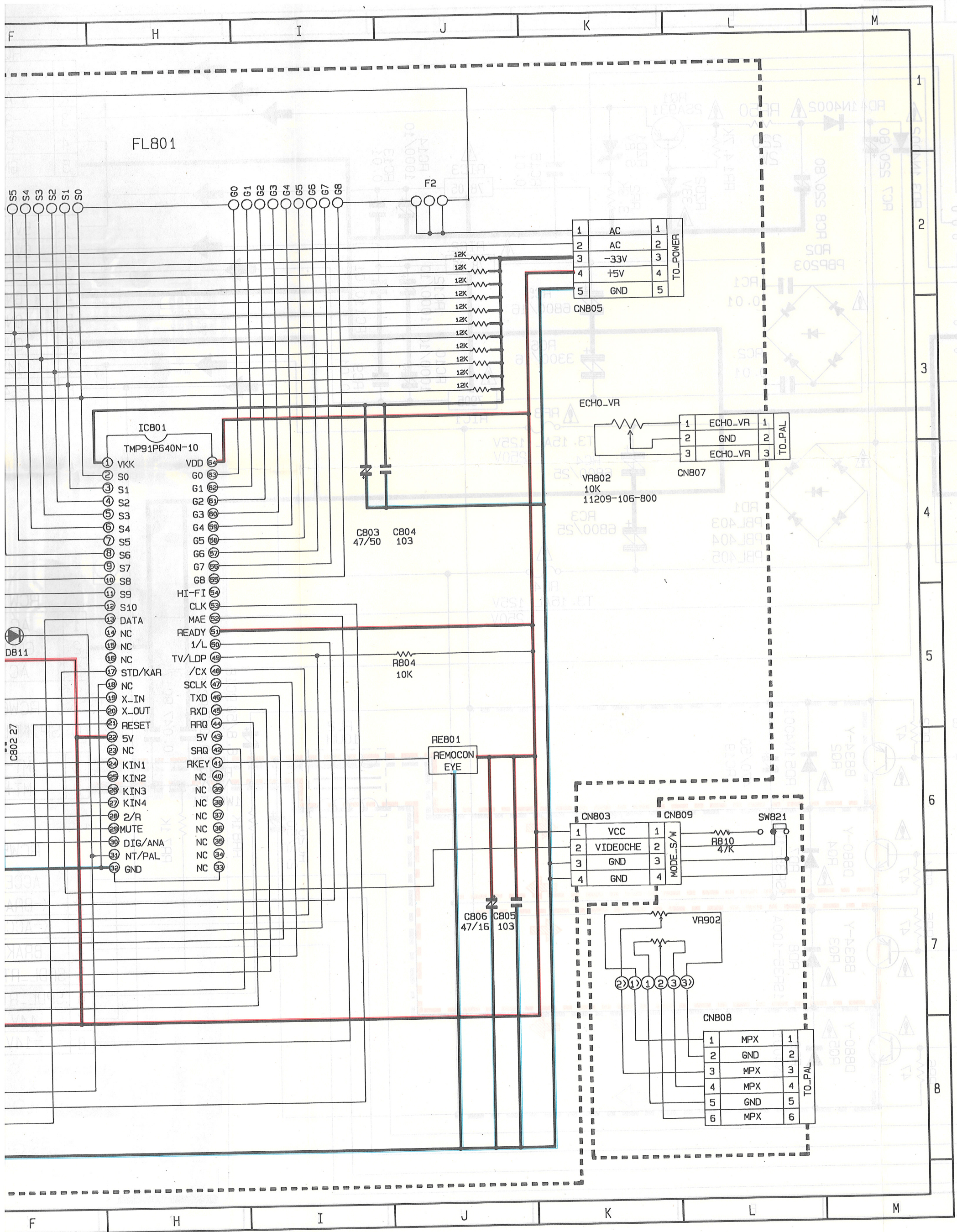
⑥ FG PCB

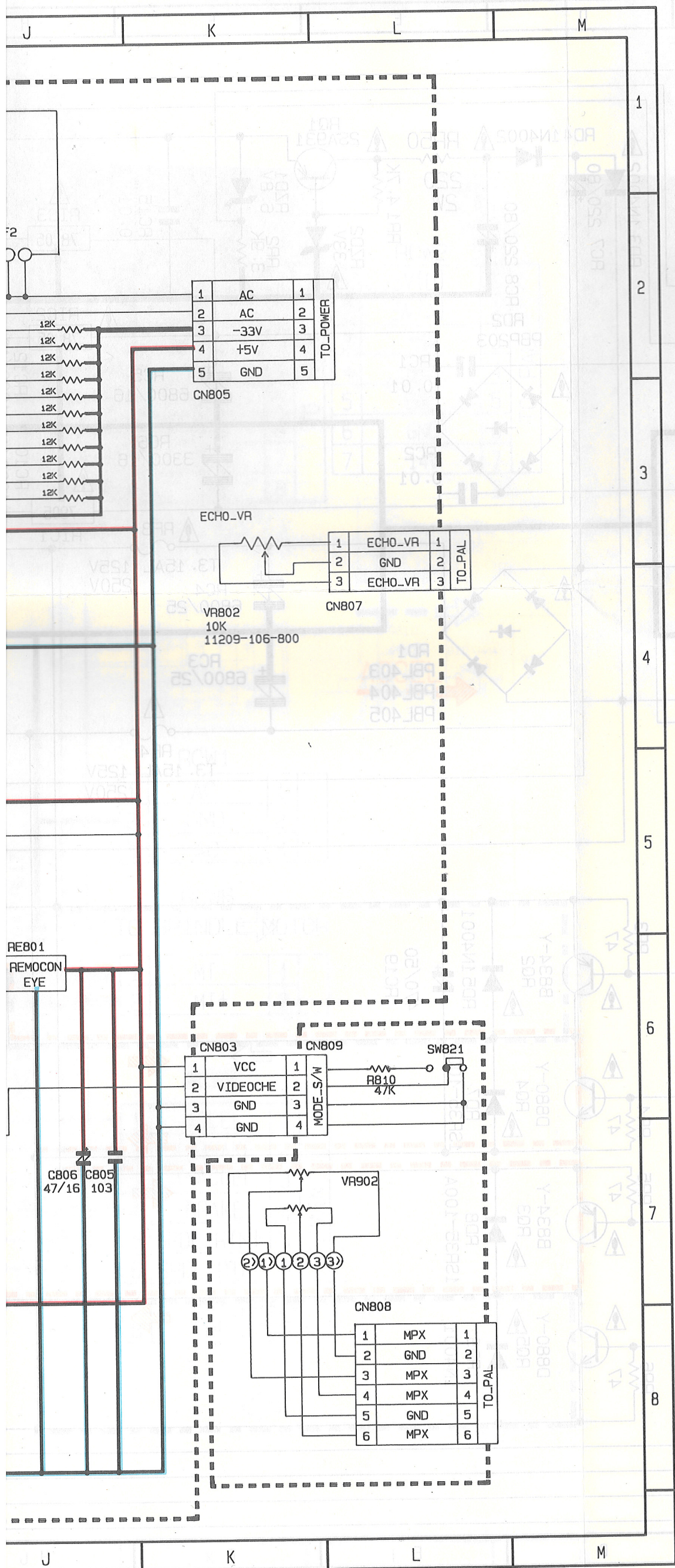


7) FRONT PCB

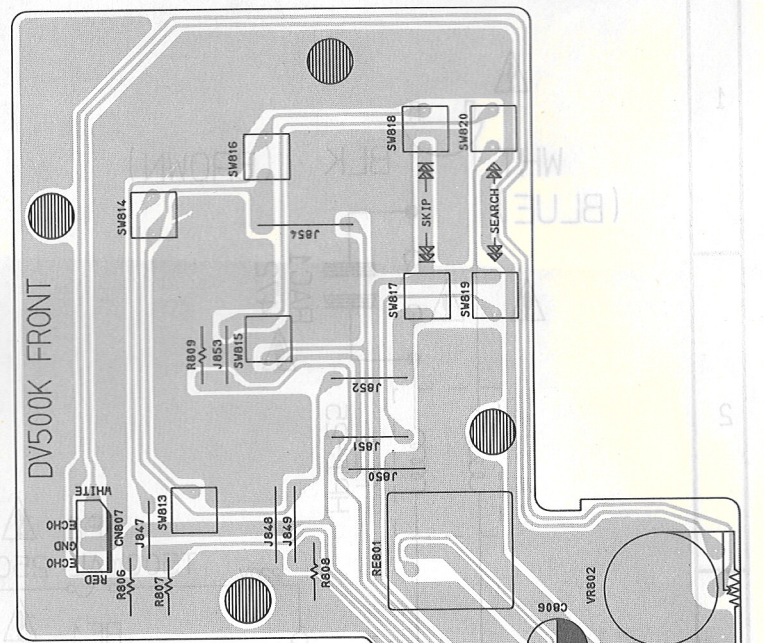
① SCHEMATIC DIAGRAM



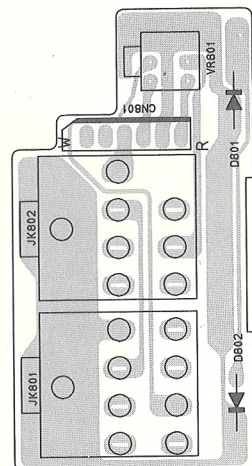




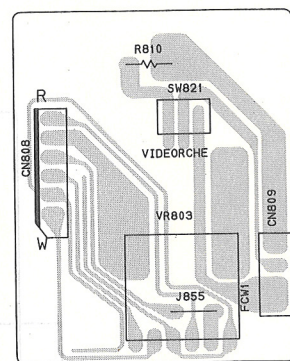
② FRONT PCB



③ MIC PCB

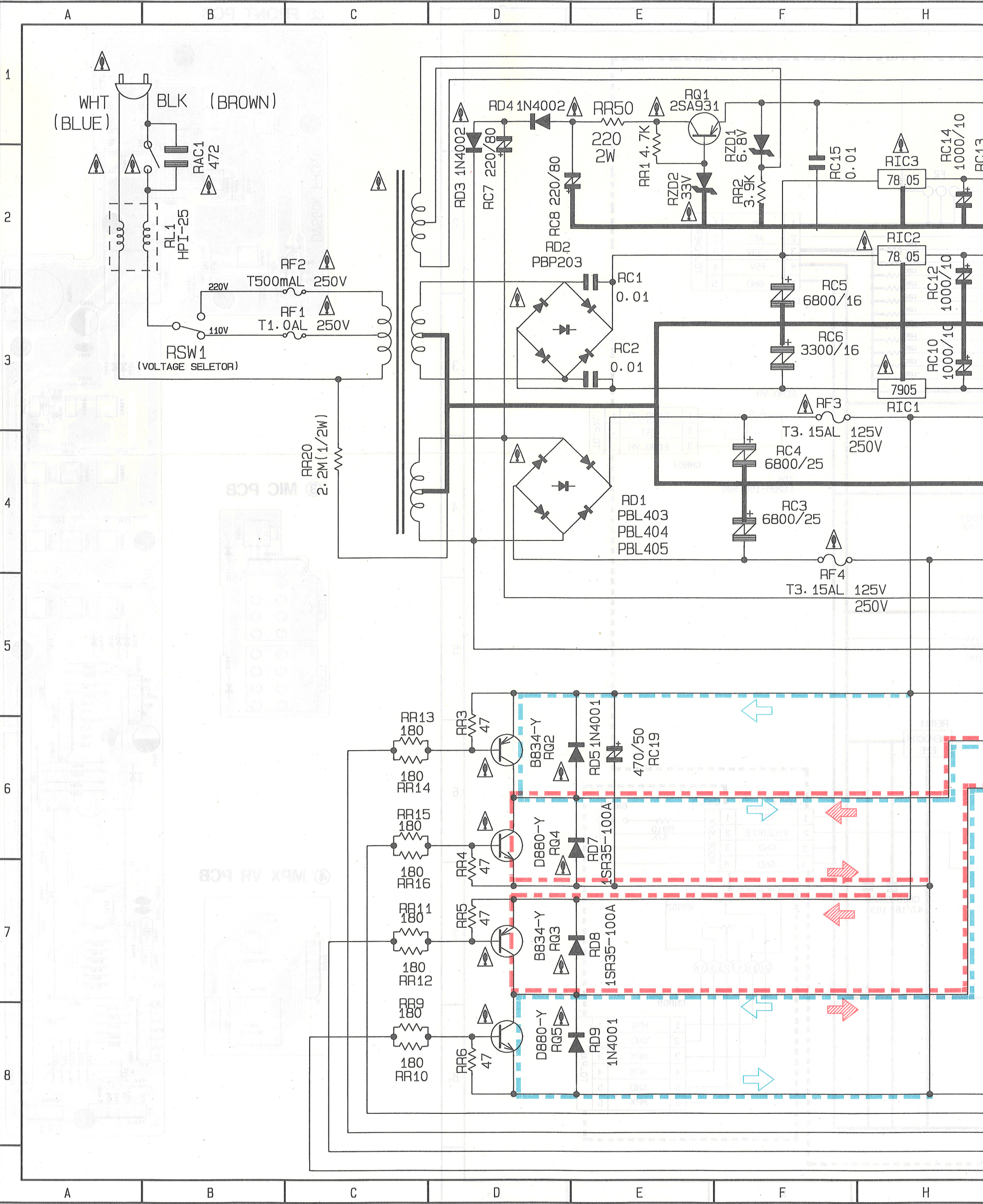


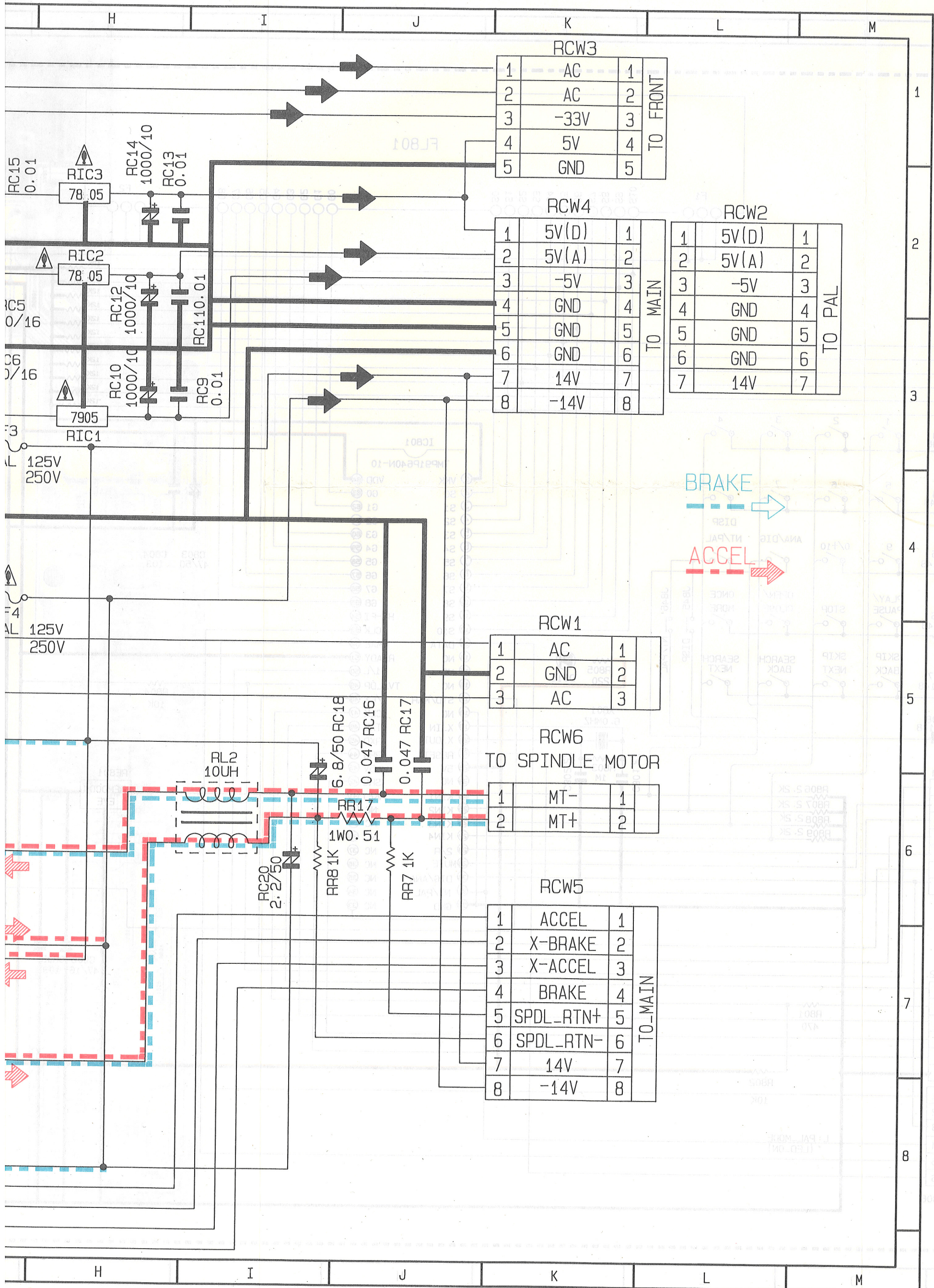
④ MPX VR PCB



8) POWER PCB

① SCHEMATIC DIAGRAM





RCW3		
1	AC	1
2	AC	2
3	-33V	3
4	5V	4
5	GND	5
TO FRONT		

RCW4		
1	5V(D)	1
2	5V(A)	2
3	-5V	3
4	GND	4
5	GND	5
6	GND	6
7	14V	7
8	-14V	8
TO MAIN		

RCW2		
1	5V(D)	1
2	5V(A)	2
3	-5V	3
4	GND	4
5	GND	5
6	GND	6
7	14V	7
TO PAL		

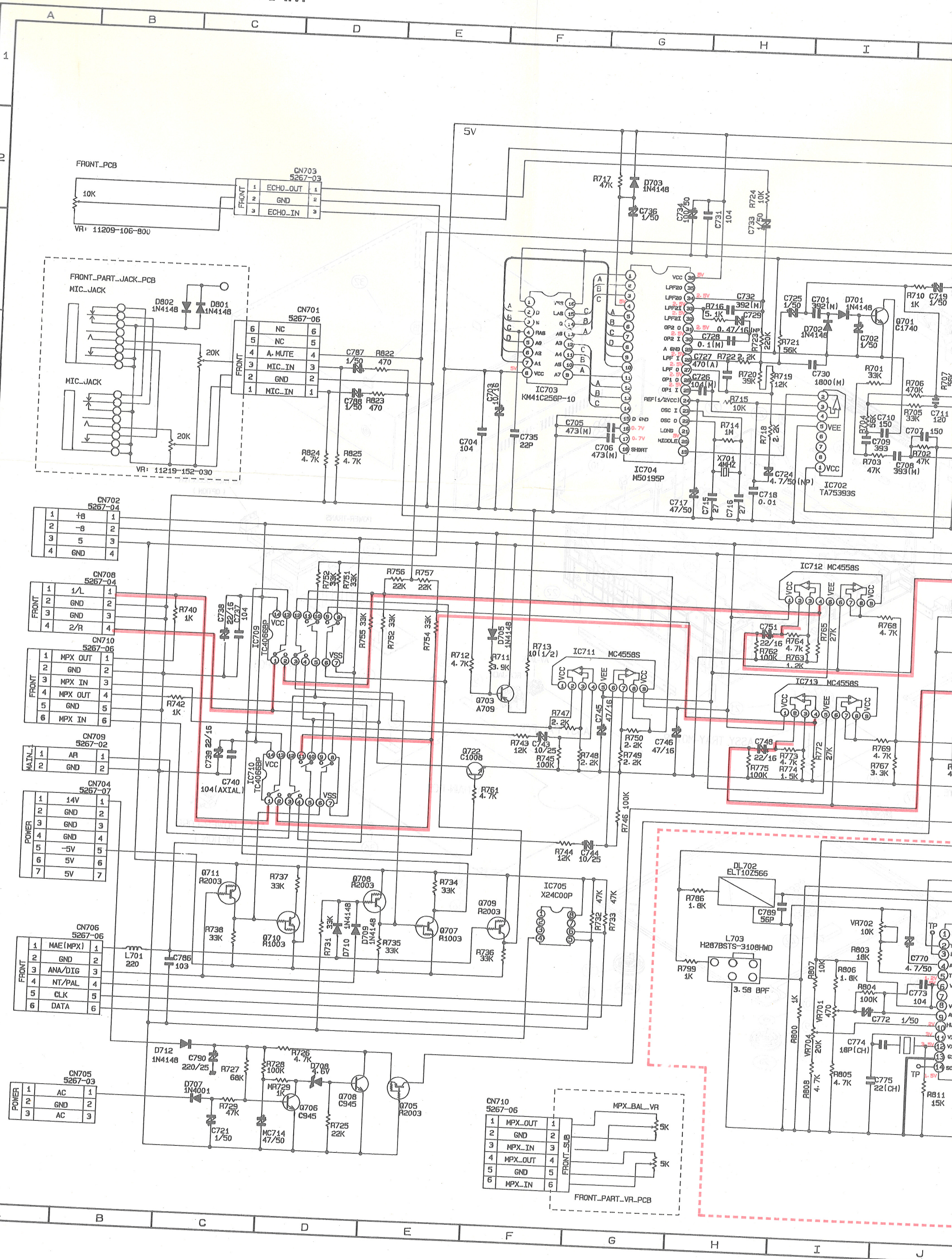
RCW1		
1	AC	1
2	GND	2
3	AC	3

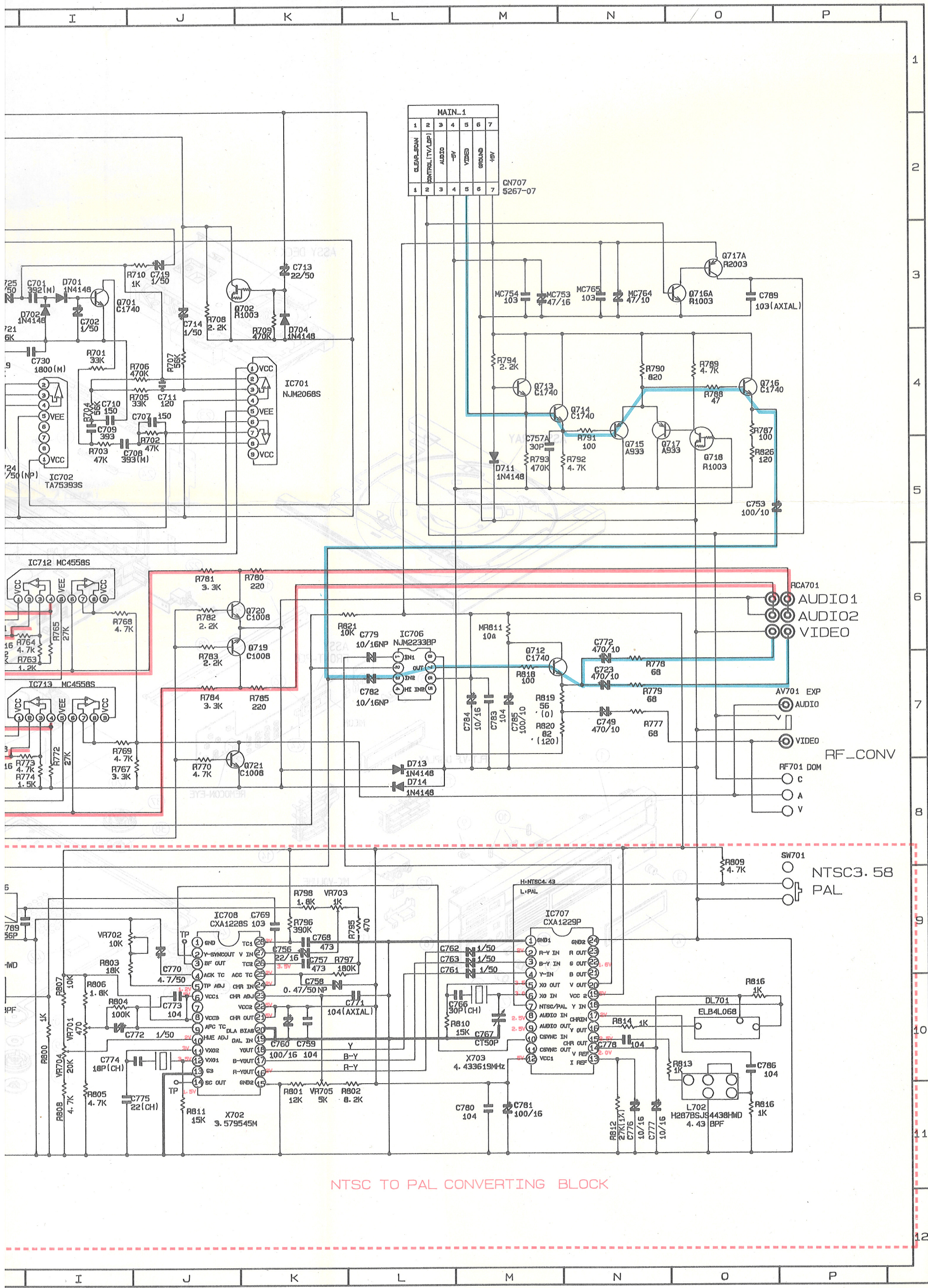
RCW6 TO SPINDLE MOTOR		
1	MT-	1
2	MT+	2

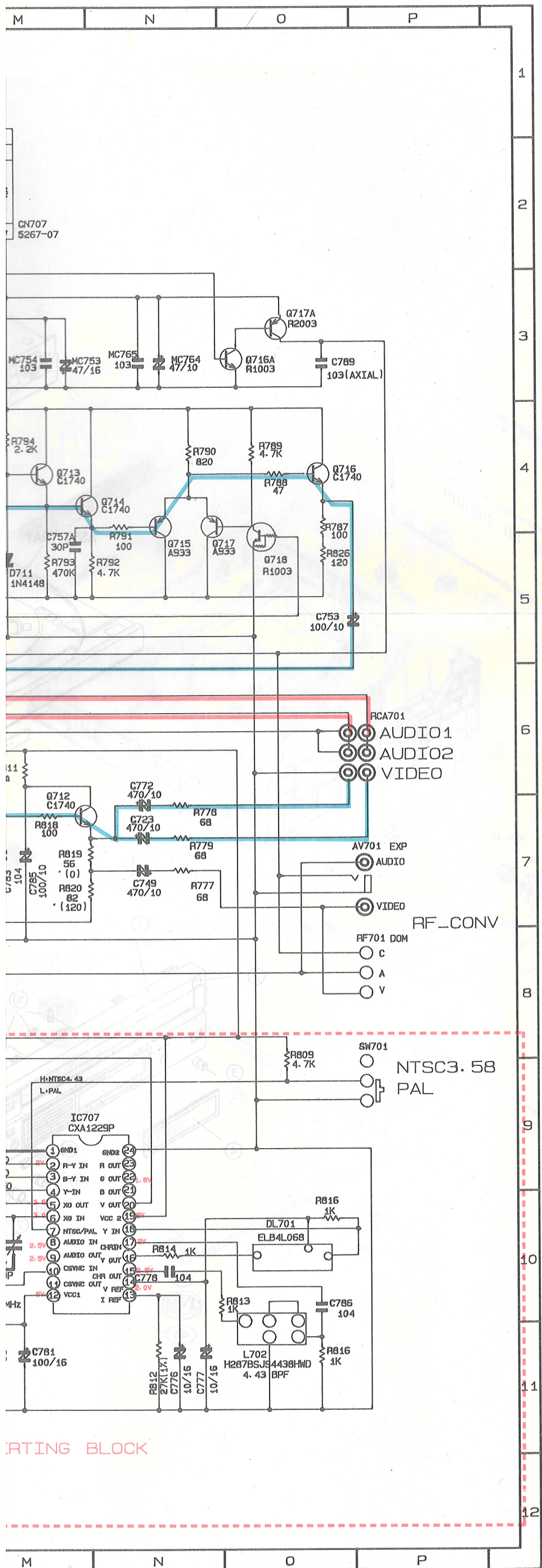
RCW5		
1	ACCEL	1
2	X-BRAKE	2
3	X-ACCEL	3
4	BRAKE	4
5	SPDL-RTN+	5
6	SPDL-RTN-	6
7	14V	7
8	-14V	8
TO-MAIN		

9) AUDIO & ECHO

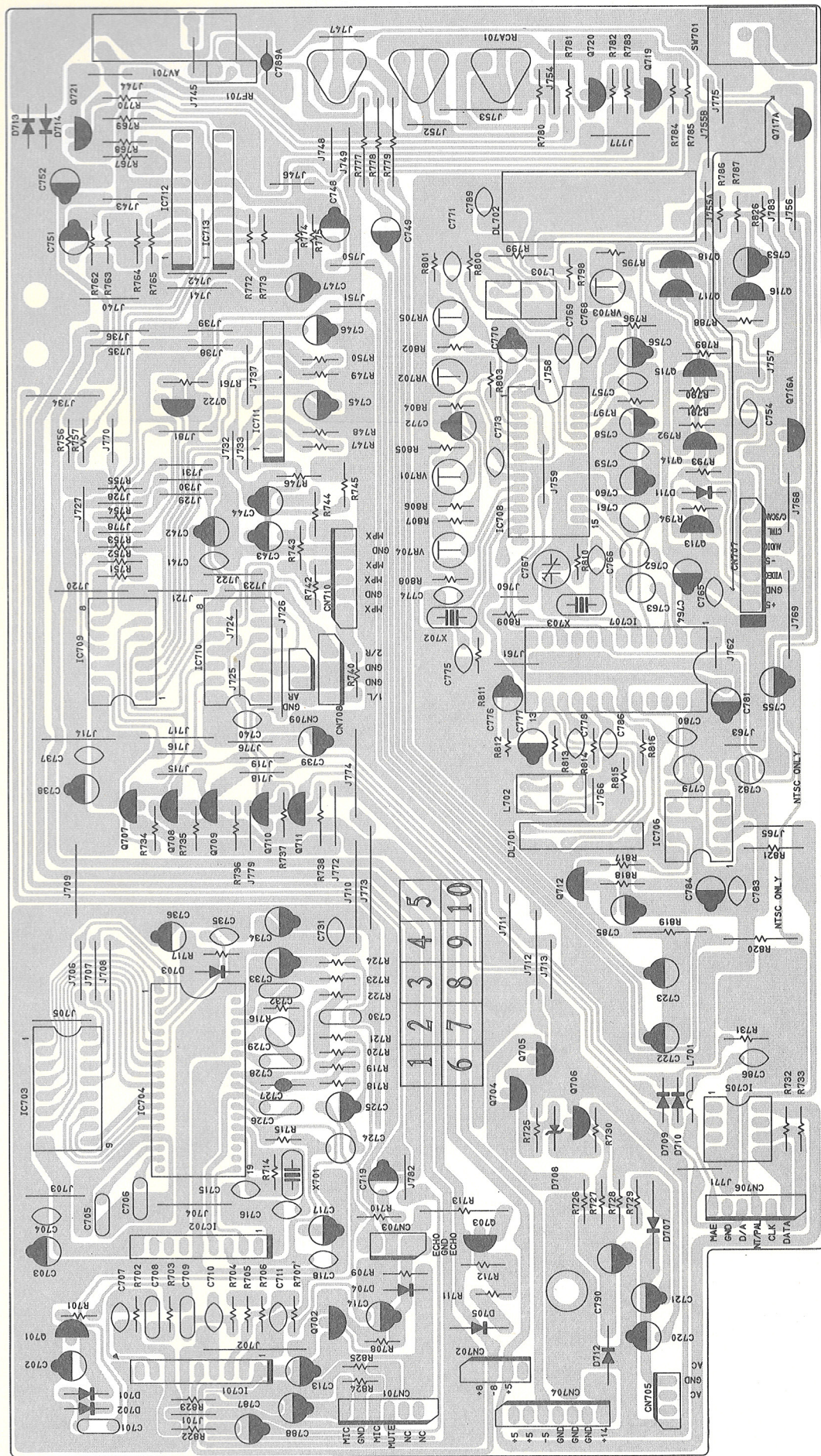
① SCHEMATIC DIAGRAM



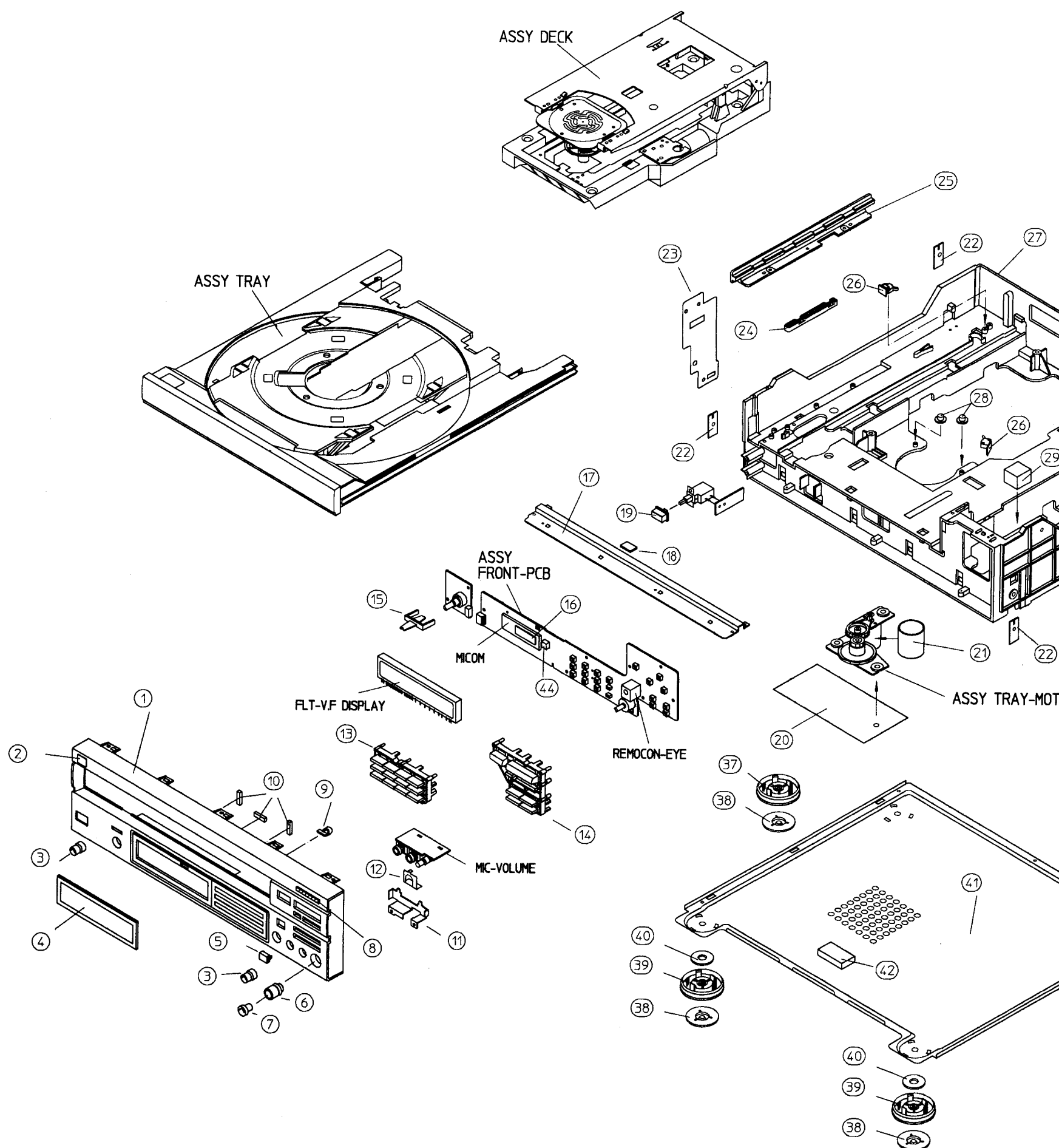


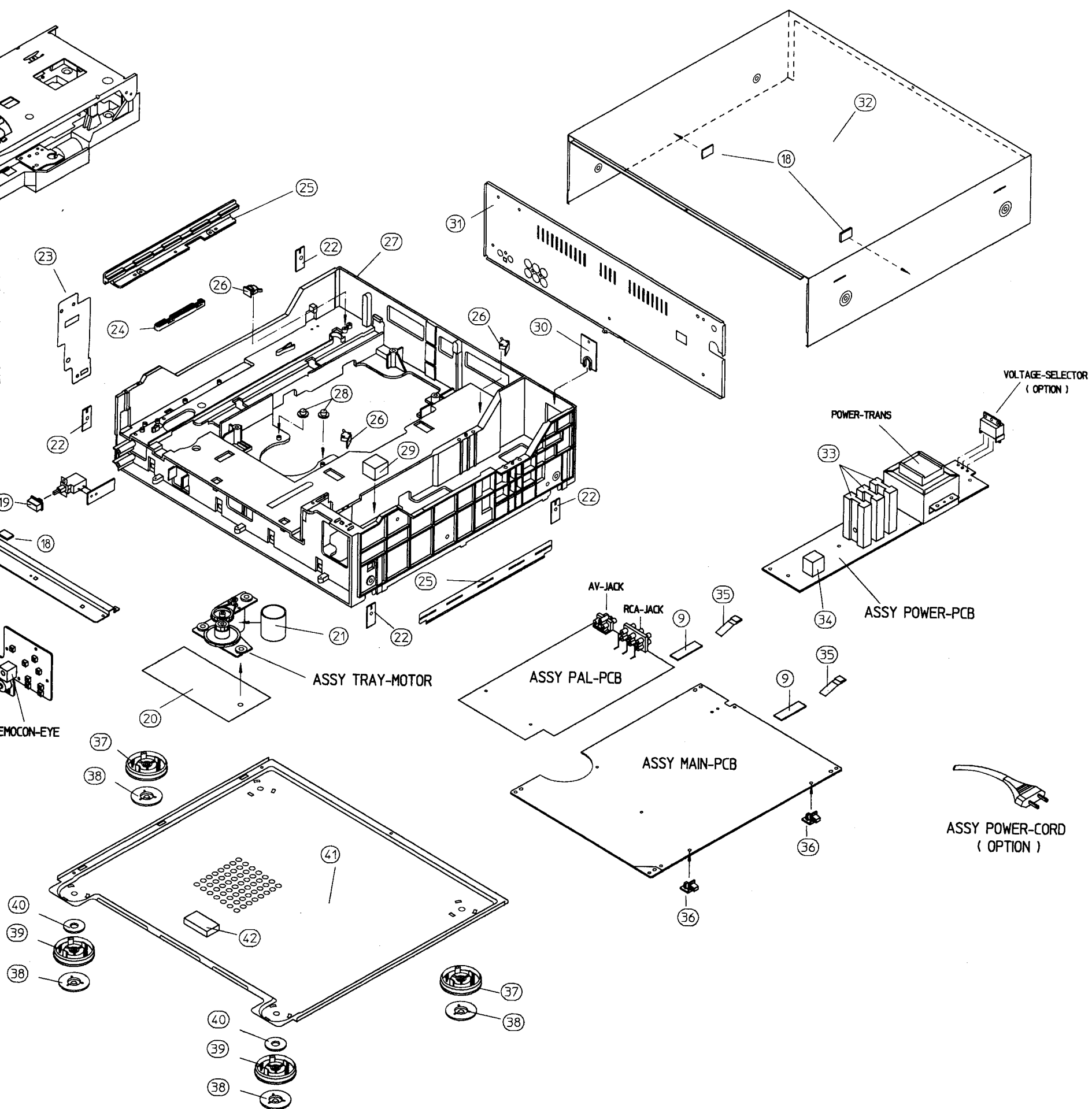


② PCB



■ PARTS LIST





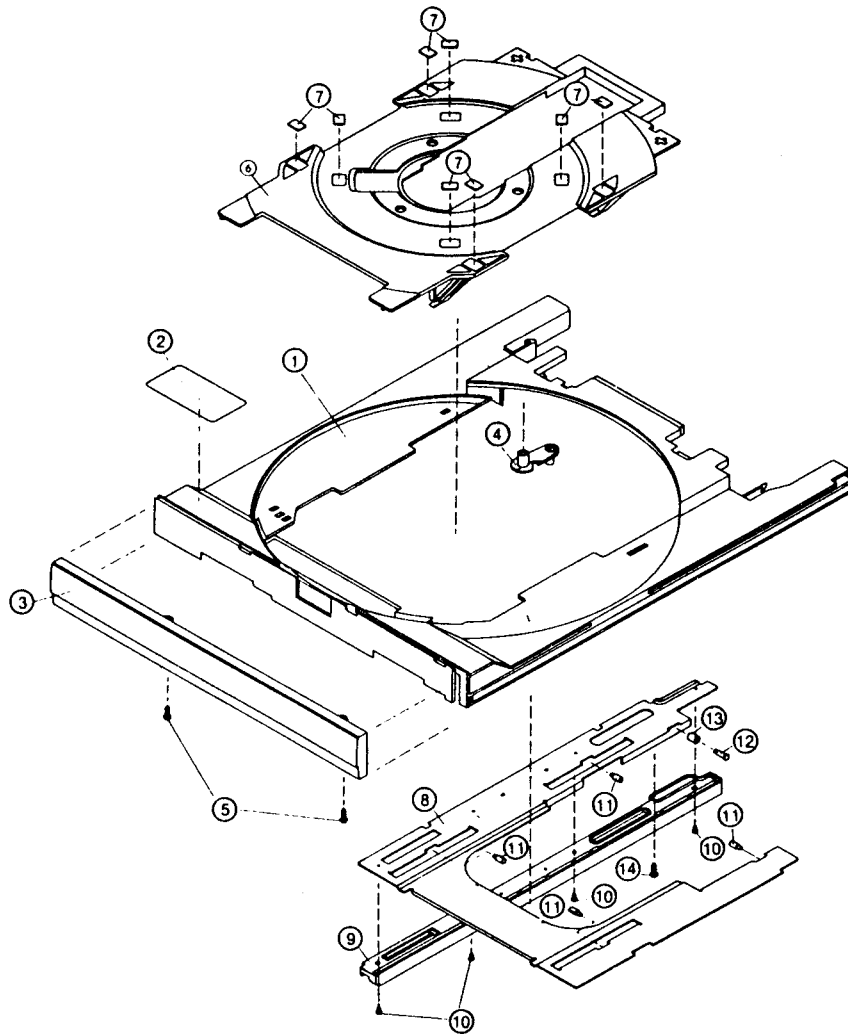
MECHANICAL PARTS

1. CHASSIS

* DIFFERENCE OF MODEL

NO.	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	Remark
1	16000-532-414	PANEL-FRONT: ABS BLK	1	*
2	18024-600-911	BADGE-BRAND: AL T0.5	1	*
3	17623-575-010	KNOB-VOLUME: ABS 94 HB BLK	2	
4	17654-567-630	WINDOW-FRONT: ACRYL T3	1	
5	17654-564-010	WINDOW-REMOCON: PC	1	
6	17624-631-110	KNOB-MICA: ABS 94 HB BLK	1	
7	17624-631-210	KNOB-MICB: ABS 94 HB BLK	1	
8	17614-506-111	BADGE-SAMSUNG: AL T1.2	1	*
9	16804-521-610	CUSHION-BOSS: EVA SPONGE	3	
10	16804-521-010	CUSHION-FLT 2: EVA SPONGE	3	
11	16624-573-710	BRKT-MIC: SECC T1.0	1	
12	16134-513-120	SHIELD-VOLUME: PBST T0.3	1	
13	15009-558-950	KNOB-FUNCTION ASS'Y: ABS 94 HB BLK + ACRYL	1	*
14	17622-504-120	KNOB-8 KEY: ABS 94 HB BLK	1	
15	17624-631-810	KNOB-SLIDE: ABS 94 HB BLK	1	
16	13054-0022-00	CUSHION-MICOM: EVA SPONGE	1	
17	16622-501-610	BRKT-FRONT: EGS T1.0	1	
18	16844-518-210	CUSHION-LD: EVA SPONGE	3	
19	17624-606-110	KNOB-POWER: ABS 94 HB BLK	1	
20	15224-0002-00	PE SHEET PCB: PE T0.3	1	
21	15009-558-952	COVER MOTOR ASS'Y: MSI2 T0.3	1	
22	16624-530-910	BRKT-CABINET: SBHG T1.0	4	
23	18154-582-300	SHIELD-PAPER: AL PAPER	1	
24	17624-619-610	GUIDE-TRAY B: POM	1	
25	17623-570-010	GUIDE-TRAY A: POM	2	
26	13579-901-010	SWITCH-MICRO: SSCTL 1217A	3	
27	16020-501-210	CHASSI-MAIN: ABS BLK	1	*
28	16154-507-910	RUBBER-CHASSIS: HICA 35	2	
29	13054-0024-00	CUSHION-SPONGE: EVA SPONGE	1	
30	16624-552-510	BRKT-AC CORD: SBHG T1.0	1	
31	12202-0022-01	CHASSIS-REAR: EGS T0.8	1	*
32	16101-502-210	CABINET-TOP: VINYL SHEET T0.75	1	
33	15684-509-720	HEAT-SINK: AL EXTR BLK 60H	3	
34	13314-0018-00	COVER-COIL: MSI T0.2	1	
35	16404-529-210	PLATE EARTH MODULE: PBST T0.3	2	
36	16603-502-610	HOLDER-PWB: NYLON 66	2	
37	16072-500-120	FOOT-1: ABS 94 HB BLK	2	
38	16174-503-620	RUBBER-FOOT: HICA BLK 45-50	4	
39	16072-500-110	FOOT: ABS 94 HB BLK H/STAMPING	2	
40	16804-502-200	CUSHION-FOOT (1): EVA SPONGE	2	
41	16101-501-020	CHASSIS-BOTTOM: EGI T0.8	1	
42	16804-520-600	CUSHION-PCB: EVA SPONGE	1	
43	13054-0023-00	CUSHION-FLT 3: EVA SPONGE	1	

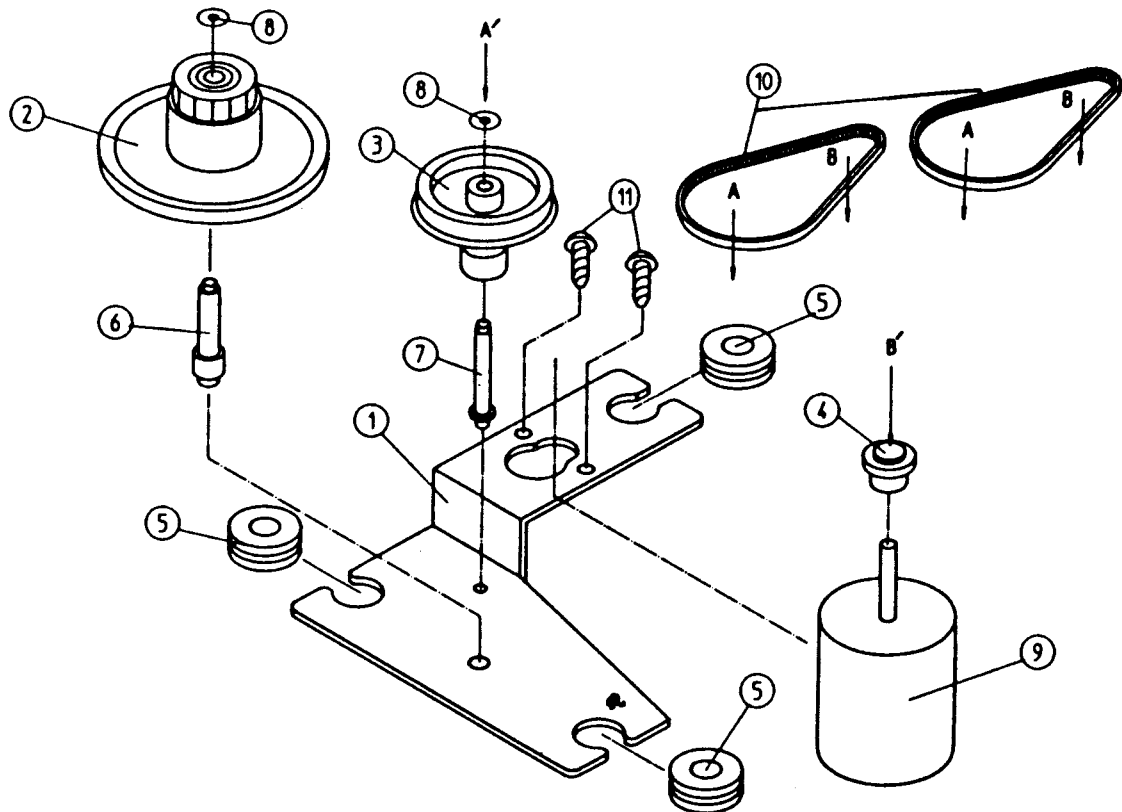
2. TRAY



TRAY PART LIST

NO.	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	Remark
	19780-000-500	ASSY-TRAY	1	*
1	16020-501-110	TRAY-MAIN: ABS BLK	1	*
2	18114-607-830	LABEL-DISC: EXPORT	1	
3	17642-541-570	DOOR-GUIDE: ABS 94 V-O BLK	1	*
4	15254-508-710	STOPPER-SLIDE: POM	1	
5	17458-130-121	SCREW-TAP-TITE BH: B-3 x 12 FE FZY	2	
6	16601-500-310	TRAY-SUB; ABS HU 600	1	*
7	13054-0020-00	CUSHION-DISC: SN T1.0 BLK	8	
8	16622-501-810	BRKT-SLIDE: EG 1.0T	1	
9	15252-500-810	GEAR-SLIDE: ABS BLK	1	
10	15104-527-910	SHAFT-GEAR SLIDE: BSBM	4	
11	15104-528-110	SHAFT-SLIDE: SUS304	4	
12	15104-527-110	ROLLER-CLAMP'S: SUS304	1	
13	15104-528-010	SHAFT-CLAMP'S: BSBM	1	
14	17558-230-101	SCREW-TAP BH SPEC: 2S-3 x 10 FE FZY	1	

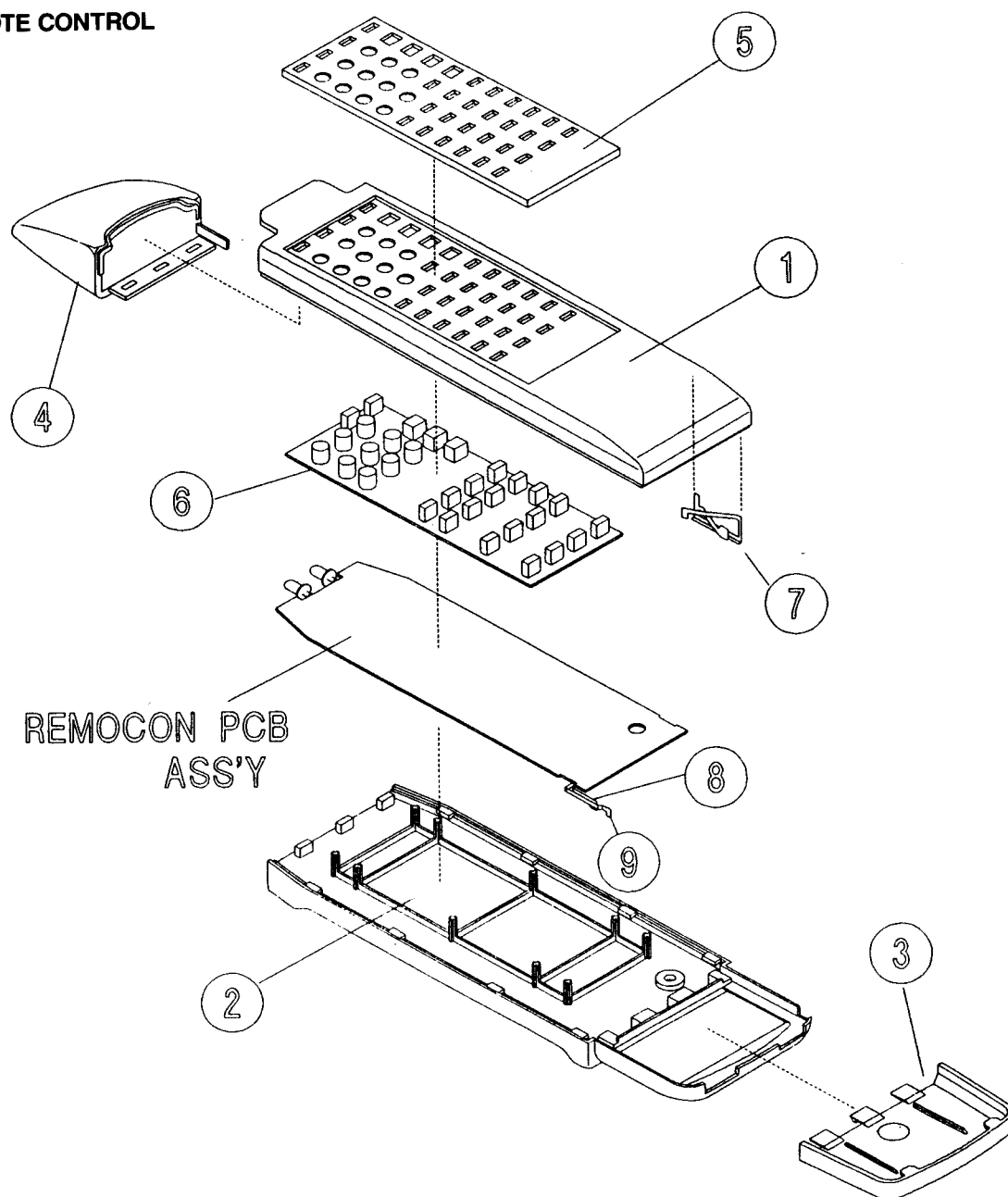
3. MOTOR



TRAY-MOTOR PART LIST

NO.	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	Remark
	15009-555-010	TRAY MOTOR COMMON: DV-5000NK CD CDV LD	1	
1	16623-506-910	BRKT-TRAY MOTOR: EG T1.6	1	
2	15214-508-110	GEAR-TRAY: POM	1	
3	15214-514-910	GEAR-PULLEY (A): POM	1	
4	15214-515-010	GEAR-PULLEY (B): POM	1	
5	16154-507-810	RUBBER-TRAY MOTOR: HICA BLK 50	3	
6	15104-528-910	SHAFT-TRAY-GEAR: BSBM	1	
7	15104-533-710	SHAFT-PULLEY (B): BSBM	1	
8	17358-104-010	O-RING: PLY 2.1×5×0.45 CUT	2	
9	14769-057-360	MOTOR-TRAY: M×N 13FB 10E	1	
10	15274-504-910	BELT-TRAY MOTOR: NEOPRENE	2	
11	17048-130-041	SCREW-RH: M 3×4 FE FZY	2	

4. REMOTE CONTROL



REMOCON PART LIST

NO.	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	Remark
	14909-501-930	REMOCON ASSY:	1	*
1	16002-517-910	CABINET-TOP: ABS BLK	1	
2	16002-518-010	CABINET-BOTTOM: ABS BLK	1	
3	16033-506-010	COVER-BATTERY: ABS BLK	1	
4	16033-506-110	FILTER-REMOCON: PC BLUE	1	
5	17714-535-302	INLAY-REMOCON: PVC SHEET T0.5	1	
6	16154-509-301	RUBBER-REMOCON: RUBBER	1	
7	16674-572-710	SPRING-A: SUS 302 T0.4	1	
8	16674-572-810	SPRING-B: SUS 302 T0.4	1	
9	16674-572-910	SPRING-C: SUS 302 T0.4	1	

5. DIFFERENT PARTS LIST BY MODEL

(1) CHASSIS

CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	MODEL
16000-532-414	PANEL-FRONT: ABS 94 HB BLK	1	DV500K/SEF, DV500K/ULK DV500K/SAH, DV500K/APO DV500K/DCH, DV500K/LSE DV500K/IES
16000-532-415	PANEL-FRONT: ABS 94 HB BLK	1	DV500K/ITE
16000-532-416	PANEL-FRONT: ABS 94 HB BLK	1	DV500K/AUR
16000-532-417	PANEL-FRONT: ABS 94 HB BLK	1	DV500K/MBH
18024-600-911	BADGE-BRAND: AL T0.5	1	DV500K/SEF, DV500K/ULK DV500K/MBH, DV500K/SAH DV500K/APO, DV500K/DCH DV500K/LSE, DV500K/IES
18024-600-912	BADGE-ITV: AL T0.5	1	DV500K/ITE
18024-600-913	BADGE-AUOPHON: AL T0.5	1	DV500K/AUR
17614-506-111	BADGE-SAMSUNG: AL T1.2	1	DV500K/SEF, DV500K/ULK DV500K/MBH, DV500K/SAH DV500K/APO, DV500K/DCH DV500K/LSE, DV500K/IES
17614-506-140	BADGE-LASER DISC 1: AL T1.2	1	DV500K/ITE, DV500K/AUR
15009-558-950	KNOB-FUNCTION ASS'Y: ABS 94 HB BLK + ACRYL	1	DV500K/SEF, DV500K/ULK DV500K/ITE, DV500K/SAH DV500K/APO, DV500K/DCH DV500K/LSE, DV500K/AUR DV500K/IES
17623-584-310	KNOB-FUNCTION: ABS 94 HB BLK	1	DV500K/MBH
16020-501-210	CHASSIS-MAIN: ABS 94 HB BLK	1	DV500K/SEA, DV500K/SCA MODEL
16020-501-220	CHASSIS-MAIN 2: ABS 94V-O BLK	1	DV500K/SEA, DV500K/SCA
12202-0022-01	CHASSIS-REAR: EGS T0.8	1	DV500K/SEF, DV500K/ULK DV500K/SAH, DV500K/APO DV500K/AUR, DV500K/IES
12202-0022-02	CHASSIS-REAR: EGS T0.8	1	DV500K/MBH
12202-0022-05	CHASSIS-REAR: EGS T0.8	1	DV500K/DCH, DV500K/LSE
17642-541-570	DOOR-GUIDE: ABS 94V-O	1	DV500K/SEF, DV500K/ITE DV500K/DCH, DV500K/SAH DV500K/APO, DV500K/LSE DV500K/AUR, DV500K/IES
17642-541-590	DOOR-GUIDE: ABS 94V-O	1	DV500K/MBH

CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	MODEL
16020-501-110	TRAY-MAIN: ABS 94 HB BLK	1	DV500K/SEA, DV500K/SCA MODEL
16020-501-120	TRAY-MAIN: ABS 94V-O BLK	1	DV500K/SEA, DV500K/SCA
16601-500-310	TRAY-SUB: HU600	1	DV500K/SEA, DV500K/SCA
16601-500-320	TRAY-SUB: ABS 94 V-O BLK	1	DV500K/SEA, DV500K/SCA

(2) REMOCON PART

CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	MODEL
14909-501-930	REMOCON ASS'Y	1	DV500K/SEF, DV500K/ULK DV500K/MBH, DV500K/SAH
17714-535-302	INLAY-REMOCON	(1)	DV500K/APO, DV500K/DCH
16154-509-301	RUBBER-REMOCON	(1)	DV500K/LSE, DV500K/IES
14909-501-930	REMOCON ASS'Y	1	DV500K/ITE
17714-535-303	INLAY-REMOCON	(1)	
16154-509-301	RUBBER-REMOCON	(1)	
14909-501-933	REMOCON ASS'Y	1	DV500K/AUR
17714-535-305	INLAY-REMOCON	(1)	
16154-509-301	RUBBER-REMOCON	(1)	

■ ELECTRICAL PARTS

1. MAIN PCB

△: SAFETY PART

LOCATION	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	Remark
WR136	11018-377-220	R-CARBON; RD 0.5T 22-J	1	△
WR128, 129	11048-477-229	R-METAL OXIDE; RS1T 2.2-J MINI TYPE	2	
ZQ14, 21, 27, PQ8, WQ1, 25, 27, 33	11139-801-022	TR CHIP; KSA 812	8	
ZQ1, 15, 16, 17, 18, 19, 81, PQ5, 6	11139-801-032	TR-CHIP; KSC1623L	13	
WQ23, 24, 26, 28				
PQ4, DQ1, 2	11139-801-040	TR-CHIP; KSR 1102 (R02)	3	
PQ1, 2	11139-801-050	TR-CHIP; KSR 2102 (R52)	2	
PQ3	11139-801-060	TR-CHIP; KSR 2104 (R54)	1	
ZQ22, WQ10, 11, 17, 20, 22, 50,	11139-801-182	TR-CHIP; KSR1103	9	
PQ7, WQ33A				
ZSR3	11249-002-080	VR-SEMI FIXED; VZ066L, 1KB, HDK	1	
ZSR4	11249-002-090	VR-SEMI FIXED; VZ066L, 500B, HDK	1	
ZSR2	11249-002-150	VR-SEMI, FIXED; VZ068TLT 5KB HDK H TYPE	1	
ZSR1	11249-002-180	VR-SEMI, FIXED; VZ068TLT 50KB HDK H TYP	1	
ZSR5	11249-002-190	VR-SEMI, FIXED; VZ068TLT 100KB HDK H TY	1	
WSR1	11249-002-240	VR-SEMI, FIXED; VZ067THT 10KB HDK V TYPE	1	
WSR7	11249-004-020	VR-SEMI, FIXED; VZ066HI, 1KB, HDK	1	
ZC28	11407-018-181	C-CERAMIC; CC45T SL50 180-K	1	
CC11	11407-018-221	C-CERAMIC; CC45T SL50V 220-K	1	
DC12	11407-067-221	C-CERAMIC; CC UJ 1H 50V 220JF	1	
WC21, 25, PC3A, PC3B	11417-344-103	C-CERAMIC; CK45T F-50V 0.01M-Z	4	
DC41, 51, 70, 73	11505-713-102	C-POLYESTER; CQ921T M 50V 0.001M-J	4	
WC36, 42, DC6, 11, ZC82	11505-713-104	C-POLYESTER; CQ921T M 50V 0.1M-J	5	
DC71, 74	11505-713-183	C-POLYESTER; CQ921T M 50V 0.018M-J	2	
CC5, 29, ZC68	11505-714-102	C-POLYESTER; CQ921T M 50V 0.001M-K	3	
WC47, CC7, 14, DC1	11505-714-103	C-POLYESTER; CQ921T M 50V 0.01M-K	4	
WC56, CC6, 17	11505-714-123	C-POLYESTER; CQ921T M 50V 0.012M-K	3	
CC12	11505-714-153	C-POLYESTER; CQ921T M 50V 0.015M-K	1	
CC10	11505-714-154	C-POLYESTER; TAPING 0.15MF-K 50V	1	
WC55	11505-714-183	C-POLYESTER; CQ921T M 50V 0.018M-K	1	
WC41, 98, ZC106	11505-714-222	C-POLYESTER; CQ921T M 50V 0.0022M-K	3	
WC48, CC9	11505-714-223	C-POLYESTER; CQ921T M 50V 0.022M-K	2	
WC58	11505-714-272	C-POLYESTER; CQ921T M 50V 0.0027M-K	1	
WC59	11505-714-273	C-POLYESTER; CQ921T M 50V 0.027M-K	1	
WC78, CC16	11505-714-333	C-POLYESTER; CQ921T M 50V 0.033M-K	2	
XC25, 49, CC34, 37, WC38, 45	11505-714-473	C-POLYESTER; CQ921T M 50V 0.047M-K	6	
DC42, 76, 75, 52, WC54	11505-714-682	C-POLYESTER; CQ921T M 50V 0.0068M-K	5	

LOCATION	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	Remark
CC15	11505-714-683	C-POLYESTER; CQ921T M 50V 0.068M-K	1	
CC26, XC23, 48, DC2, WC44	11505-714-822	C-POLYESTER; CQ921T M 50V 0.0082M-K	5	
ZC87, CC8, 22, WC40, 46, 53	11509-121-300	C-POLYESTER; M 50V 0.22M-J	6	
ZC33, 25, 105, XC9, 26, 27, 28, 50	11608-102-104	C-ELECTROLYTIC; SMS T 10V 100M (5 × 11)	23	
33, CC25, PC5, WC49, 51, 60, 72, 75, WC99, 102A, PC7, CC10, 27, ZC35, 39				
DC31	11608-102-333	C-ELECTROLYTIC; SMS T 10V 33M (5 × 11)	1	
ZC118, PC3, 4	11608-102-471	C-ELECTROLYTIC; SMS T 10V 470M (8 × 11.5)	3	
ZC13, 41, 54, 69, 72, 80	11608-102-473	C-ELECTROLYTIC; SMS T 10V 47M (5 × 11)	30	
ZD75, 112, 41, XC11, 30, 54, 35				
CC31, DC67, 9, 18, 32, 36, 38, 39, 37				
DC46, 56, 47, 48, 60, 61, 62, 64				
PC1, 2	11608-103-221	C-ELECTROLYTIC; SMS T 16V 220M (8 × 11.5)	2	
ZC37, DC24, 45, 55, 49, 59, 29	11608-103-223	C-ELECTROLYTIC; SMS T 16V 22M (5 × 11)	7	
PC8	11608-103-471	C-ELECTROLYTIC; SMS T 16V 470M (10 × 12.5)	1	
ZC115	11608-103-473	C-ELECTROLYTIC; SMS T 16V 47M (5 × 11)	1	
WC22	11608-104-104	C-ELECTROLYTIC; SMS T 25V 100M (6.3 × 11)	1	
ZC58, 59, 55, 50, 8, XC18, 36	11608-104-223	C-ELECTROLYTIC; SMS T 25V 22M (5 × 11)	9	
WC95, 97				
ZC10, 15, 92, 93, 106, 208, SC24, 27	11608-106-100	C-ELECTROLYTIC; SMS T 50V 10M (5 × 11)	8	
ZC62, 64, 94, WC70, PC9	11608-106-109	C-ELECTROLYTIC; SRE T 50V 1M (3 × 5)	7	
WC23, 24				
XC27	11608-106-111	C-ELECTROLYTIC; SMS T 50V 0.1M (5 × 11)	1	
PC6	11608-106-222	C-ELECTROLYTIC; SMS T 50V 2.2M (5 × 11)	1	
ZC54A	11608-152-470	C-ELECTROLYTIC; SRA T 10V 47M (6.3 × 7)	1	
ZC48, 49, 111, 114, DC17	11608-156-471	C-ELECTROLYTIC; SRA T 50V 0.47M (4 × 7)	5	
ZC65, 66, 45, 46, 30, XC51, WC83, 91, WC93, ZC61	11608-156-472	C-ELECTROLYTIC; SRA T 50V 4.7M (5 × 7)	10	
CC19	11608-202-101	C-ELECTROLYTIC; NP SMS T 10V 100M (5 × 11)	1	
DC10, WC68, 63, 37, 43	11608-203-100	C-ELECTROLYTIC; NP SMS T 16V 10M (5 × 11)	5	
CC18, WC57	11608-203-220	C-ELECTROLYTIC; NP SMS T 16V 22M (5 × 11)	2	
WC61, 85	11608-206-109	C-ELECTROLYTIC(NP); SMS T 50V 1M (5 × 11)	2	
DC5	11608-206-228	C-ELECTROLYTIC; NP SMS T 50V 0.22M (5 × 11)	1	
DC23	11608-206-229	C-ELECTROLYTIC; SMS T 50V 2.2M (5 × 11)	1	
XC52, WC66	11608-206-478	C-ELECTROLYTIC; NP SMS T 50V 0.47M (5 × 11)	2	
DC22	11608-206-479	C-ELECTROLYTIC(NP); SMS T 50V 4.7M (5 × 11)	1	
ZTC1, CTC1	11829-512-030	C-TRIMMER; TZ03R 20PF	2	
ZIC4	12109-101-780	IC-DUALLINE RECEIVER; SN75108AN	1	△
ZIC2	12109-103-600	IC-IH DELAY; MSM6964-3RS	1	△

LOCATION	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	Remark
DIC6	12109-303-240	IC-DIGITAL FILTER; SM5840AP	1	△
WIC3	12109-303-400	IC-DATA PROCESSOR; SL220B	1	△
WIC4	12109-303-520	IC-NOR GATE; KS74AHCT02	1	△
DIC7, 8	12109-310-750	IC-DAC; PCM61P/AD1860N	2	△
ZIC3	12109-401-300	IC-CCD; TL8707P	1	△
PIC1	12109-401-730	IC-REGULATORS; MC7808BF, 8.5W	1	△
ZIC1	12119-102-390	IC-VSP/CDV; HA11528NT	1	△
WIC1	12119-102-400	IC-SERVO; HA11529NT	1	△
WIC9	12119-102-450	IC-MOTOR CONTROL; BA6219B	1	△
CIC1	12119-102-680	IC-TBC; HD49403NT	1	△
XIC1	12119-102-740	IC-ASP; HA12127ANT	1	△
DIC5	12119-203-770	IC-DS PROCESSOR; KS5990/KS59910	1	△
WIC6	12119-203-790	IC-RF AMP; KA9201	1	△
WIC2	12119-204-200	IC-OPT; TMP91P640N	1	△
ZIC5, WIC7, 8	12119-401-170	IC-OP AMP; MC4558C	3	△
DIC2	12119-401-190	IC-OP AMP; NJM 082S	1	△
DIC3, 11, 12, WIC5	12119-401-220	IC-CMOS AN/SW; NJU4053BD	4	△
DIC10	12119-401-260	IC-OP AMP; NJM4556D	1	△
DIC9, 13, 14, 16	12119-401-340	IC-OP AMP; NJM5532S	4	△
CIC2, 3, DIC1	12119-401-630	IC-DUAL OPAMP; MC4558S	3	△
DIC15	12119-401-710	IC-OP AMP; TC40H004P	1	△
PIC3	12119-601-800	IC-REGULATOR; MC78T05	1	△
PIC2	12119-601-840	IC-REGULATOR; MC7908C	1	△
XQ1, 2, ZQ2, 4, 7, 9, 11, 13, 23, 25	12139-307-170	TRANSISTOR; 2SC1/40S (R.S) TAPE	16	
ZQ24, 26, CQ8, 9, 10, 12				
CQ2, WQ54A	12139-601-120	FET; 2SK184-Y	2	
ZQ3, 5, 6, 8, 10, 12, 20, CQ1, 11, 13	12149-102-350	TRANSISTOR; 2SA933S (R.S) TAPE	10	
WQ12	12149-305-100	TRANSISTOR; MJE1/1	1	△
CQ3, 4, 5, 6	12159-301-370	TR DIGITAL; KSR1203 TAPING	4	
WQ32, 33A	12159-301-840	TR DIGITAL; KSR1002, TAPE	2	
PD4	12169-201-080	DIODE-RECTIFIER; 1N 4001, TAPE	1	
ZD2, 3, CD1, 2,3, 4, 5, 6, 7, XD1, 2	12169-301-290	DIODE-SW; 1SS53/1N4148, CT; 6PF	17	
PD2, 3, 4, WD4, 5, 6				
WZD1	12169-403-490	DIODE ZN; RD 3.9EB/UZ 3.9BM	1	
ZZD1, 2	12169-404-770	DIODE ZENER; 500MW UZ-3.6BSA TAPING	2	
ZZD3, WZD8	12169-404-840	DIODE ZENER; 500MW UZ-9 1BSC TAPING	2	
WZD7	12169-404-880	DIODE-ZENER; 500MW UZ-12BSC TAPING	1	
DD3	12169-501-110	DIODE-VARICAP; KV-1260	1	
DD1, 2	12169-501-220	DIODE-VARICAP; SV-70	2	
ZD4	12169-501-230	DIODE-VARICAP; SVC-321-SPC1	1	

LOCATION	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	Remark
ZL2, 3, 4, 5	12429-211-120	COIL-CHOKE AXIAL LEAD; RES-1 Q40 LAL02	4	
WL2, 4	12429-211-151	COIL-CHOKE AXIAL LEAD; RES-1 Q40 LAL02	2	
WL5	12429-211-221	COIL-CHOKE AXIAL LEAD; RES-1 Q40 LAL02	1	
ZL11	12429-211-271	COIL-CHOKE AXIAL LEAD; RES-1 Q40 LAL03	1	
ZL1	12429-211-330	COIL-CHOKE AXIAL LEAD; RES-1 Q40 LAL02	1	
ZL24	12429-211-339	COIL-CHOKE AXIAL LEAD; RES-1 Q40 LAL02	1	
ZL7, XL2	12429-211-470	COIL-CHOKE AXIAL LEAD; RES-1 Q40 LAL02	2	
ZL9	12429-211-479	COIL-CHOKE AXIAL LEAD; RES-1 Q40 LAL02	1	
ZL6, XL3	12429-211-560	COIL-CHOKE AXIAL LEAD; RES-1 Q40 LAL02	2	
ZL19	12429-211-680	COIL-CHOKE AXIAL LEAD; RES-1 Q40 LAL02	1	
ZL22	12429-211-681	COIL-CHOKE AXIAL LEAD; RES-1 Q40 LAL03	1	
ZL20	12429-211-820	COIL-CHOKE AXIAL LEAD; RES-1 Q40 LAL02	1	
WL3	12429-311-181	COIL-CHOKE; AX 180UH-02	1	
ZL8, 18, 21, 23	12429-311-220	COIL-CHOKE; AX 22UH-02 (LAL02TB220K)	4	
ZL10, 15, 16, 25, JW167A	12429-411-100	COIL-CHOKE; AX 10UH-02 (LA02NA100K)	5	
ZL12, 13, XL1	12429-411-101	COIL-CHOKE; AX 100UH-02 (LAL02TB101K)	3	
DL1	12619-744-021	COIL-CAN; 5.6UH BTKAN-K5506Z-KR	2	
JW145 TO JW135	13049-011-115	WIRE MONO; 1007 #26 (T) U/C, BLK 150MM	1	
MAIN (Jumper)	13049-011-130	WIRE MONO; 1007 #26 (T) U/C, BLK 300MM	1	
WR128 TO G	13049-011-220	WIRE MONO; 1007 #26 (T) U/C, RED 200MM	1	
MAIN (Jumper)	13049-031-135	WIRE-LEAD; 1015 #22 (T) U/C BLK 350MM	1	
MAIN (Jumper)	13049-031-335	WIRE-LEAD; 1015 #22 (T) U/C, WHT 350MM	1	
WCW2	13072-040-250	CONNECTOR-WIRE/B, S; 51004-10/5295-10	1	
WCW5	13072-042-140	CONNECTOR-WIRE/B, S; 51004-02/5295-02	1	
WCW10	13072-044-140	CONNECTOR-WIRE/B, S; 51004-04/5295-04	1	
WCW3	13072-048-150	CONNECTOR-WIRE/B, S; 51004-08/5295-08	1	
PCB (Output Test)	13078-468-140	CONNECTOR-WIRE/B, S; 51004-08/5295-08	1	
ZCW5	13349-119-020	CONNECTOR-WAFER; 53014-0210, MOLEX	1	
CCW3	13349-119-030	CONNECTOR-WAFER; 53014-0310, MOLEX	1	
DCW3	13349-512-562	CONNECTOR-WAFER; STICK 5267-04A 4P-TYP	1	
WCW6	13349-512-565	CONNECTOR-WAFER; STICK 5267-06A 6P-TYP	1	
CCW1, ZCW1, WCW7	13349-512-568	CONNECTOR-WAFER; STICK 5267-07A 7P-TYP	3	
CCW2, WCW1	13349-512-569	CONNECTOR-WAFER; STICK 5267-08A 8P-TYP	2	
DCW2	13349-527-502	CONNECTOR-WAFER; STICK 5267-03A 3P	1	
XBP1	14529-710-010	LC FILTER; SBP10223545B-4057-09	1	△
XBP2	14529-710-020	LC FILTER; SBP10228544B-4058-10	1	△
CX1	14539-501-080	X-TAL; 14.3MHz	1	
WX1	14539-503-090	CERAMIC-RESONATOR; FCR 6.0 M2	1	
DX1	14539-507-030	CRYSTAL; HC-49/J 16.9344MHz CL = 18PF	1	
WQ14, 15, 19, 21	A4052-0004	TR-HIGH POWER KSB834-Y 30W 3000MA 9MH	4	△
WQ13, 16, 18, 20	A4052-0005	TR-HIGH POWER KSB880-Y 30W 3000MA 3MH	4	△

2. POWER PCB

LOCATION	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	Remark
RR2	11018-277-392	R-CARBON; RD 1/4T 3.9K-J	1	
RR20	11018-377-225	R-CARBON; RD 0.5T 2.2M-J	1	△
RC16, 17	11417-329-472	C-CERAMIC, HK; CK45T D 50V 0.0047M-M	2	
RC15, 1, 2	11417-344-103	C-CERAMIC; CK45T F 50V 0.01M-Z	3	
RAC1	11469-501-070	C-CERAMIC, AC; DE7100FZ 472P VA1 KC ALL	1	△
RC14	11608-102-102	C-ELECTROLYTIC; SHL T 10V 100M (10×12.5)	1	
RC10, 12	11608-102-471	C-ELECTROLYTIC; SMS T 10V 470M (8×11.5)	2	
RC18, 20	11608-156-222	C-ELECTROLYTIC; SRA T 50V 2.2M (4×7)	2	
RC5	11609-103-682	C-ELECTROLYTIC; SMS T 16V 6800M (18×35)	1	
RC7, 8	11609-114-221	C-ELECTROLYTIC; SM 80V 220M (12.5×25)	2	
RC3, 4	11609-154-682	C-ELECTROLYTIC; SRF 25V 6800M (22×35)	2	△
RC6	11609-401-540	C-ELECTROLYTIC; SMS 16V 3300M (16×25)	1	△
RC19	11609-402-320	C-ELECTROLYTIC; SM 50V 470M (16×25)	1	
RIC1	12119-601-780	IC-REGULATOR; MC7905C	1	△
RIC2, 3	12119-601-800	IC-REGULATOR; MC78T05	2	△
RQ1	12149-101-590	TRANSISTOR; KSA931-Y, TAPE	1	△
RD7, 8	12169-103-400	DIODE-RECT, 1SR35-100A T-81 1.6V 30A P	2	△
RD3, 4, 5, 9	12169-201-090	DIODE-RECTIFIER; 1N 4002, TAPE	4	
RD6, 10	12169-201-150	DIODE-RECT, 1N4142; 3A 400V	2	△
RD1, 2	12169-219-320	DIODE-RECT; PBP203	2	△
RZD2	12169-403-650	DIODE-ZENER; UZ-36B, 500MW 36V 5MA	1	
RZD1	12169-404-100	DIODE-ZN; RD6.8FB/UZP6.8B	1	
WHT, BLK	13059-201-203	LEAD-FASTEN; RING 1007 #26 200	1	
RCW5	13078-468-140	CONNECTOR-WIRE/B, S; 5264-08/5395-08 10	1	
RCW2	13079-468-140	CONNECTOR-WIRE/B, S; 5264-08/5395-08 10	1	
TAB/STUD	13124-100-710	TAP-STUD; 0.5T SPC1 BT2	4	
RCW2	13349-103-053	CONNECTOR-WAFER; STICK5267-05A 5P	1	
(RCW5)	13349-156-020	WAFER ASSY 5096-02C	1	
RCW4	13349-512-561	CONNECTOR-WAFER; STICK 5267-02A 2P-TYP	1	
RSW2	13599-902-040	SW-POWER, SDDL1PCHL011	1	△
RR17, RD1, 2	13954-500-210	CERAMIC-PIPE; P11.4 7MM	5	
RL2	14529-723-010	FILTER-LINE; BA10	1	
RL1	14529-819-010	EMI FILTER; HP1-P25	1	△
POWER-PCB	15684-509-720	HEAT-SINK; AL EXTR BLK 60H, RS1700D	3	
SCREW	17458-130-081	SCREW-TAP TITE, BH; B-3×8 FE FZY	9	
RR17	A1004-0203	R-METAL; RS 1 RS 0.510HM	1	△
RQ2, 3	A4052-0004	TR-HIGH POWER; KSB834-Y 30W-3000MA 9MH	2	△
RQ4, 5	A4052-0005	TR-HIGH POWER; KSD880-Y 30W-3000Ma 3MH	2	△
RT1	12869-223-010	TRANS-POWER; EI66×40 110/220 60Hz DV60	1	△

LOCATION	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	Remark
Power SW. Cord	13052-900-110	CONNECTOR-WIRE, 5239-03 UL, 618 #24 810X	1	
Power Cord	13059-808-291	POWER CORD ASSY; CP2 300V 3A KS W/S 20	1	△
RF1, 2, REU3, 4	13164-101-913	CLIP-FUSE, PBP 3-1/2H T0.3 SN	8	
RSW1	13599-502-023	VOLTAGE SELECTOR; 00120354 STICK	1	△
RF2	14709-241-140	FUSE; T 250V 0.5A 20 EUR	1	△
RF1	14709-241-200	FUSE; T 250V 1A 20 EUR	1	△
RFU3, 4	14709-241-280	FUSE; T 250V 3.15A 20 EUR	2	△

3. MECHA PCB

LOCATION	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	Remark
PR101	11018-277-121	R-CARBON; RD 1/4T 120-J	1	
MSR4	11249-002-120	VR-SEMI, FIXED; VZ068TLT 1KB HDK H TYPE	1	
MSR5	11249-002-150	VR-SEMI, FIXED; VZ068TLT 5KB HDK H TYPE	1	
MSR2, 3	11249-002-160	VR-SEMI, FIXED; VZ068TLT 10KB HDK H TYP	2	
MSR1	11249-002-190	VR-SEMI, FIXED; VZ068TLT 100KB HDK H TY	1	
MC13, 14	11417-104-104	C-CERAMIC; OK45T F12V 100000-Z	2	
MC4, 50	11608-106-109	C-ELECTROLYTIC; SRE T 50V 1M (3×5)	2	
MC7, 9, 11, 12	11608-152-101	C-ELECTROLUTIC; SRE T 10V 100M (6.3×5)	4	
MIC4	12119-203-160	IC-PHOTO INTEMUPTER; GP2S04BC	1	△
MIC1, 2, 3	12119-401-170	IC-OP AMP; MC4558C	3	△
MQ2, 3, 30, 31, 32	12139-307-170	TRANSISTOR; 2SC1740S (R.S) TAPE	5	
MQ4	12159-301-330	TR-DIGITAL; KSR2003, TAPE	1	
MQ1, 5, 6	12159-301-780	TR DIGITAL; KSR 1003	3	
MD1	12169-301-290	DIODE-SW; 1SS53/1N4148, CT; 6PF	1	
ML3, 4	12429-411-101	COIL-CHOKE; AX 100UH-02 (LAL02TB101K)	2	
ML1	12429-508-100	COIL-CHOKE; AX 10UH-04	1	
FEED, TILT	13052-901-180	CONNECTOR-WIRE/B, S; 51004-04/BS20-002	1	
FG	13052-901-750	CONNECTOR-WIRE/B, S; 51004-03/60 9013 3	1	
MCW8	13052-901-760	CONNECTOR-WIRE/B, S; 51004-02/529502 1	1	
DECK	13078-377-160	CONNECTOR-WIRE/B, S; 5264-07/JC25-07 10	1	
T1-SW	13078-472-140	CONNECTOR-WIRE/B, S; 5264-02/5395-02 10	1	
DEC-SW	13078-472-160	CONNECTOR-WIRE/B, S; 5395-02/5264-02 106	1	
TO-SW	13078-472-240	CONNECTOR-WIRE/B, S; 5264-02/5395-02 10	1	
TEST PIN	13124-500-110	TEST-PIN; PI 1.0×13.5 MM BSBM2	2	
MCW3	13349-119-020	CONNECTOR-WAFER; 53014-0210, MOLEX	1	
MCW5, 6, 7	13349-119-040	CONNECTOR-WAFER; 53014-0410, MOLEX	3	
MCW2	13349-119-080	CONNECTOR-WAFER; 53014-0810, MOLEX	1	
MCW4	13349-119-100	CONNECTOR-WAFER; 53014-1010, 2M/M, MOLEX	1	

LOCATION	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	Remark
MCW1	13349-147-240	CONNECTOR-WAFER; 5597-24APB	1	
TI, TO, DEC	13349-512-561	CONNECTOR-WAFER; STICK 5267-02A 2P-TYP	3	
TI, TO, DEC (3P)	13579-901-010	MICRO-S/W, SSCTL1217L	3	

4. FRONT PCB

LOCATION	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	Remark
VR802	11209-106-800	VR-ROTARY; RK 16K 1130A01 13B	1	
VR801	11219-152-030	VR-ROUND; RK09/2210A01 23B	1	
VR803	11219-153-020	VR; ROTARY; RK16K12CO Z01 23A	1	
IC801	12119-204-210	IC-OPT; TMP470 670N	1	
D801, 802, 803, 804, 805	12169-301-290	DIODE-SW; 1SS58/1N4148, C5; 6PF	8	
D806, 807, 808				
RE801	12199-101-080	REMOCON EYE; MM-001A (CD22R MESH)	1	
D811	12309-104-430	LED-LAMP; SLV-31 VC3	1	
FL801	12339-107-020	FL TUBE: FIP9B-1M8	1	
CN807	13078-493-150	CONNECTOR WIRE/B, S; 5267-03/5395-03 25	1	
CN801, 808	13078-496-150	CONNECTOR WIRE/B, S; 5264-06/5395-06 25	1	
CN805	13088-445-135	CONNECTOR WIRE/B, L; 5264-05/JC25-05 10	1	
CN802, 806	13088-446-135	CONNECTOR WIRE/B, L; 5264-06A/JC-2506 1	1	
CN804	13088-447-135	CONNECTOR WIRE/B, L; 5264-07/JC2507 100	1	
JK801, JK802	13339-101-650	JACK HEAD PHONE; SOQ4694-01-4010 (METAL)	2	
CN809	13349-120-040	CONNECTOR-WAFER; 5530-04A	1	
CN803	13349-121-040	CONNECTOR-WAFER; 3024-04A HPR	1	
S821	13519-201-290	SW-SLIDE; SSSS312N E011	1	
SW801, 802, 803, 804, 805	13559-901-100	SWITCH-TACK; SKHV10910L0	18	
SW806, 807, 809, 810, 811, 813,				
SW814, 815, 816, 817, 818, 819, 820				
SW808, 812				
X801	14539-503-090	CERAMIC-RESONATOR; FCR 6.0 M2	1	

5. PAL PCB

LOCATION	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	Remark
R713	11018-377-100	R-CARBON; RD 0.5T 10-J	1	
R820	11018-377-121	R-CARBON; RD 0.5T 120-J	1	
C743, 744	11608-104-103	C-ELECTROLYTIC; SMS T 25V 10M (TX11)	2	
C790	11608-104-221	C-ELECTROLYTIC; SMS T 25V 220M (8 × 11.5)	1	

LOCATION	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	Remark
C720	11608-104-473	C-ELECTROLYTIC; SMS T 25V 47M (T x 11)	1	
C702, 714, 725, 733	11608-106-102	C-ELECTROLYTIC; SMS T 50V 1M (5 x 11)	8	
C736, 721, 787, 788				
C782	11608-203-100	C-ELECTROLYTIC; NP SMS T 16V 10M (5 x 11)	1	
C729	11608-206-478	C-ELECTROLYTIC; NP SMS T 50V 0.47M (5 x 11)	1	
C724	11608-206-479	C-ELECTROLYTIC(NP); SMS T 50V 4.7M (5 x 11)	1	
IC702	12119-101-180	IC-COMPARATOR; TA75393S/NJM2903S/LA639	1	
IC711, 712, 713	12119-401-630	IC-DUAL OP AMP; MC4558S	3	
IC709, 710	12119-401-720	IC-SWITCHING; TC4066BP	2	
IC701	12119-401-760	IC-OP AMP; NJM2068SD/UPC4570HA	1	
Q701, 712, 716, 714, 713	12139-307-170	TRANSISTOR; 2SC1740S (R, S) TAPE	5	
Q703	12149-101-570	TRANSISTOR; KSA709-Y, TAPE	1	
Q717, 715	12149-102-350	TRANSISTOR; 2SA933S (R, S) TAPE	2	
Q704, 706	12149-301-900	TRANSISTOR; KSC 945-Y, TAPE	2	
Q719, 720, 721, 722	12149-301-930	TRANSISTOR; KSC1008-6, TAPE	4	
Q705, 708, 709, 711, 717A	12159-301-330	TR-DIGITAL; KSR2003, TAPE	5	
Q702, 707, 710, 718, 716A	12159-301-780	TR DIGITAL; KSR 1003	5	
D707	12169-201-080	DIODE-RECTIFIER; 1N 4001, TAPE	1	
D701, 702, 703, 704, 705	12169-301-290	DIODE-SW; ISS53/1N4148, CT; 6PF	11	
D709, 710, 711, 712, 713, 714				
D708	12169-403-200	DIODE-ZN; RD4073/UZ 4.7RM	1	
CN709	13349-512-561	CONNECTOR-WAFER; STICK 5267-02A 2P-TYP	1	
CN702, 708	13349-512-562	CONNECTOR-SAFER; STICK 5267-04A 4P-TYP	2	
CN701, 706, 710	13349-512-565	CONNECTOR-SAFER; STICK 5267-06A 6P-TYP	3	
CN704, 707	13349-512-568	CONNECTOR-SAFER; STICK 5267-07A 7P-TYP	2	
CN703, 705	13349-527-502	CONNECTOR-SAFER; STICK 5267-03A 3P-TYP	2	
X701	14534-504-040	CERAMIC RESONATOR; CSA4, 00MG	1	
RCA701	A3040-0020	JACK0RCA; 013.5 JACK S-438P-07 6P	1	
IC703	A4000-0020	IC-DRAM; KM41C256P-10 DIP AUDIO	1	
IC704	B4008-0050	IC-LINEAR; M50195P DIP DIGIAL ECHO	1	
IC706	B4012-0062	IC-LINEAR; NJM2233BD DIP VIDEO SWITCH	1	
SW701	13519-930-220	SWITCH-SLIDE; 00120050 IC-2P	1	
R812	A1006-0556	R-METAL FILM; RM 1/8 T 273-F	1	
C767	A1111-0012	C-TRIMMER, CERA; FTA 60-13.5PF	1	
L703	A1240-0048	FILTER-LC; BP 3.58M H287BSJS-3108 HWD	1	
L702	B1240-0047	FILTER-LC; BP 4.43M H287BSJS-K5250	1	
X703	A1280-0038	CRYSTAL; 4.433619MHz HC-49/ μ -A 50PPM	1	
X702	A1280-0039	CRYSTAL; 3.579545MHz HC-49/ μ -A 50PPM	1	
AV701	A3040-0051	JACK-RCA; PI 3.5 S-454P	1	
DL702	B1146-0010	DELAY-LINE; ELT-10Z566 0.6 μ S	1	

LOCATION	CODE NO.	DESCRIPTION & SPECIFICATION	Q'TY	Remark
DL701	B1146-0011	DELAY-LINE; ELB-42068 0.175 μ S	1	
IC705	B4000-0019	IC-EEPROM; X24C00P DIP	1	
IC708	B4012-0039	IC-LINEAR; CXA1228S NTSC/PAL DECODER	1	
IC707	B4012-0040	IC-LINEAR; CXA1229P NTSC/PAL ENCODER	1	

■ ABBREVIATION

AC	: Alternating Current	L	: Left, Low
AD	: Analog to Digital	LD	: Laser Disc
ADJ.	: ADJustment	LDP	: Laser Disc Player
AGC	: Automatic Gain Control	LED	: Light Emitting Diode
AM	: Amplitude Modulation	LPF	: Low Pass Filter
AMP	: AMPlifier	LSI	: Large Scale Integration
ANT	: ANTenna		
		max	: maximum
BAL	: BALance	MECHA	: MECHANism
BPF	: Band Pass Filter	MHz	: Mega Hertz
		MIC	: MICrophone
C	: Condenser, Capacitor	MICOM	: MICroCOMputer
CAV	: Constant Angular Velocity	MID	: MIDDLE
CCD	: Charge Coupled Device	min	: minimum
CD	: Compact Disc	mV	: milliVolt
CH	: CHannel		
CLV	: Constant Linear Velocity	NO	: Number
Cm	: Centimeter	NR	: Noise Reduction
COMP	: COMParator	NTSC	: National Television System Committee
C-SYNC	: Composite SYNCHronization		
CTL	: ConTrol	PAL	: Phase Alternating Line
CX	: Compatible eXpansion	PCB	: Printed Circuit Board
		PLL	: Phase Lock Loop
D	: Depth, Diode	PWM	: Pulse Width Modulation
D/A	: Digital to Analog		
dB	: deciBel	R	: Right
DC	: Direct Current	RAM	: Random Access Memory
DEMOD.	: DEMODulation	REF	: REFerence
DISP	: DISPlay	REMOCON	: REMOte CONtrol
DO	: Drop Out	REW	: REWInd
DSP	: Digital Signal Processor	RF	: Radio Frequency
DV	: Digital Video	rms	: root mean square
		ROM	: Read Only Memory
EFM	: Eight to Fourteen Modulation		
EQ	: EQualizer	sec	: second
		SG	: Signal Generator
FE	: Focus Error	S/N	: Signal to Noise
FF	: Fast Forward	spec	: specification
FG	: Focus Gain	SPDL	: SPinDL
Fig.	: Figure	STBC	: Spindle Time Base Correction
FL	: Focus Loop, Focus Lock	SW	: SWitch
FM	: Frequency Modulation	sync	: synchronization
FREQ.	: FREQuency	SYSCON	: SYStem CONtrol
FTS	: Focus Tracking Slider		
		TBC	: Time Base Correction
GND	: GrouND	TE	: Tilt Error
		TG	: Tracking Gain
H	: Height, High, Horizontal	TP	: Test Point
HPF	: High Pass Filter	TRANS	: TRANSformer
H-SYNC	: Horizontal Synchronization		
Hz	: Hertz	V	: Voltage
		VCO	: Voltage Controlled Oscillator
IC	: Integrated Circuit	VHF	: Very High Frequency
I/O	: Input/Output		Video Level
INTRO	: INTROduction		
		VOL	: VOLume
Kg	: Kilogram	Vp-p	: peak-to-peak Voltage
KHz	: Killo Hertz	V-SYNC	: Vertical SYNCHronization
		VTVM	: Vaccum Tube Volt Meter
		W	: Weight, Watt